

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

SAMSUNG ELECTRONICS CO., LTD.,
SAMSUNG ELECTRONICS AMERICA, INC.,
SAMSUNG TELECOMMUNICATIONS
AMERICA GENERAL, L.L.C.,
SAMSUNG SEMICONDUCTOR, INC., and
SAMSUNG AUSTIN SEMICONDUCTOR L.L.C.,

Plaintiffs,

v.

ON SEMICONDUCTOR CORP. and
SEMICONDUCTOR COMPONENTS
INDUSTRIES, LLC,

Defendants.

Civil Action No. 06-720 (JJF)

ON SEMICONDUCTOR CORP. and
SEMICONDUCTOR COMPONENTS
INDUSTRIES, LLC,

Plaintiffs,

v.

SAMSUNG ELECTRONICS CO., LTD.,
SAMSUNG ELECTRONICS AMERICA, INC.,
SAMSUNG TELECOMMUNICATIONS
AMERICA GENERAL, L.L.C.,
SAMSUNG SEMICONDUCTOR, INC., and
SAMSUNG AUSTIN SEMICONDUCTOR L.L.C.,

Defendants.

Civil Action No. 07-449 (JJF)

**SAMSUNG'S ANSWERING BRIEF IN SUPPORT
OF ITS PROPOSED CLAIM CONSTRUCTIONS**

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EXHIBIT LIST

Exhibits A through BB cited herein refer to the exhibits to the Declaration Of Brian Woo Lee In Support Of Samsung's Opening Brief In Support of Its Proposed Claim Constructions, filed April 14, 2008. Exhibits CC through HH refer to the exhibits to the Declaration Of Jason Choy In Support Of Samsung's Answering Brief In Support of Its Proposed Claim Constructions, filed April 28, 2008.

- Exhibit A:*** U.S. Patent No. 5,000,827
- Exhibit B:*** U.S. Patent No. 5,000,827 File History
- Exhibit C:*** U.S. Patent No. 5,361,001
- Exhibit D:*** U.S. Patent No. 5,361,001 File History
- Exhibit E:*** U.S. Patent No. 5,563,594
- Exhibit F:*** U.S. Patent No. 5,563,594 File History
- Exhibit G:*** U.S. Patent No. 6,362,644
- Exhibit H:*** U.S. Patent No. 6,362,644 File History
- Exhibit I:*** U.S. Patent No. 5,252,177
- Exhibit J:*** U.S. Patent No. 5,252,177 File History
- Exhibit K:*** ALEXANDER WATT & ARNOLD PHILIP, THE ELECTRO-PLATING AND ELECTRO-REFINING OF METALS (1902)
- Exhibit L:*** U.S. Patent No. 4,170,959
- Exhibit M:*** U.S. Patent No. 4,906,341
- Exhibit N:*** MODERN DICTIONARY OF ELECTRONICS (6th ed. 1984)
- Exhibit O:*** DICTIONARY OF ELECTRONIC PACKAGING, MICROELECTRONIC, & INTERCONNECTION TERMS (1990)
- Exhibit P:*** MCGRAW-HILL ELECTRONICS DICTIONARY (5th ed. 1994)
- Exhibit Q:*** ACADEMIC PRESS DICTIONARY OF SCIENCE AND TECHNOLOGY (1992)
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- Exhibit S:*** THE ILLUSTRATED DICTIONARY OF ELECTRONICS (6th ed. 1994)

- Exhibit T:*** PAUL HOROWITZ & WINFIELD HILL, THE ART OF ELECTRONICS (2d ed. 1989)
- Exhibit U:*** U.S. Patent No. 5,228,052
- Exhibit V:*** PETER VAN ZANT, MICROCHIP FABRICATION, A PRACTICAL GUIDE TO SEMICONDUCTOR PROCESSING (2d ed. 1990)
- Exhibit W:*** COMPREHENSIVE DICTIONARY OF ELECTRICAL ENGINEERING (1999)
- Exhibit X:*** ON Semiconductor Corp. and Semiconductor Components Industries, L.L.C.'s Preliminary Proposed Claim Constructions served on March 17, 2008
- Exhibit Y:*** M. E. Burba et al., *Selective Dry Etching of Tungsten for VLSI Metallization*, 133 J. Electrochem. Soc., October 1986, at 2113
- Exhibit Z:*** WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY (1986)
- Exhibit AA:*** WEBSTER'S NINTH NEW COLLEGIATE DICTIONARY (1988)
- Exhibit BB:*** MCGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS (4th ed. 1989)
- Exhibit CC:*** U.S. Patent No. 4,855,251
- Exhibit DD:*** U.S. Patent No. 4,263,606
- Exhibit EE:*** MCGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS (4th ed. 1989)
- Exhibit FF:*** Letter from Guadalupe M. Garcia dated April 27, 2008, purporting to modify several of Defendants' proposed constructions
- Exhibit GG:*** U.S. Patent No. 4,870,472
- Exhibit HH:*** MCGRAW-HILL ELECTRONICS DICTIONARY (5th ed. 1994)

– Emphasis Added Unless Otherwise Noted –

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Plaintiffs Samsung Electronics Co., Ltd., Samsung Electronics America, Inc., Samsung Telecommunications America General, L.L.C., Samsung Semiconductor, Inc., and Samsung Austin Semiconductor, L.L.C. (collectively, “Samsung”) respectfully submit this answering brief in support of their proposed constructions for the disputed claim terms of the five patents-in-suit.

ARGUMENT

I. U.S. PATENT NO. 5,000,827¹

Defendants’ proposed constructions for the ’827 patent seek to rewrite the claims to cover the accused Samsung processes rather than determine the meaning provided by the intrinsic evidence or understood by those skilled in the art. As a result, Defendants propose a construction for the term “bump” that reads on flat surfaces and propose that the critical limitation for the recited process need not happen during the process. While these unorthodox constructions may be necessary for Defendants’ attenuated infringement contentions, that is not a proper basis to construe the claims. The evidence relevant to claim construction refutes Defendants’ constructions, and for the same reason, this Court should reject them as well.

A. Defendants’ Description Of The Background Of The Patent Is Erroneous

In their background section describing the ’827 patent, Defendants take the position that “[o]utside the context of this [’827] patent, electroplating is most commonly used to place a thin layer of a precious metal such as gold or silver on an article made of less expensive metal.” (Defendants Op. Br. at 39.) The ’827 patent tells a different story, recognizing that: (1) electroplating “bumps” for semiconductor contacts was well known in the prior art (Ex. A at 4:1-3 (“FIG. 5 shows a prior art plating apparatus for plating metallization bumps onto

¹ Defendants’ brief addresses the patents and terms in a different order than agreed upon by the parties, as reflected in the Joint Claim Construction Charts (D.I. 90). For the convenience of the Court, Samsung addresses the terms herein in the same order they appear in the joint charts.

predetermined terminal areas of a silicon wafer.”)); and (2) use of cup electroplating machines was well known in the semiconductor manufacture field. (Ex. A at col. 5:1-2 (“cup plating apparatus is known in the art”).) Thus, the notion that the ’827 patent is anything other than a narrow patent limited to the specific process parameter amendments that the applicants were forced to add to avoid the prior art is belied by the intrinsic evidence.

Similarly, Defendants characterize their patent as one related to “optimiz[ing]” three parameters “to offset the edge effect and create uniform height metallization bumps across a substrate.” (See Defendants Op. Br. at 40.) Far from merely “optimizing” parameters, the patent requires that all three process parameters must be altered or changed during the method—not merely “optimized.” Absent altering (or changing) all three parameters, the Patent Office found the claims invalid in view of the prior art—and Defendants did not disagree.

B. Proper Construction Of The Disputed Terms Of The ’827 Patent

1. “metallized bumps”

Samsung’s Construction	Defendants’ Construction
“Small mounds of metal on a semiconductor pad that are utilized as contacts.” The preamble is a limitation.	“The accumulation of a metal layer or layers.”

Defendants’ proposed construction of “metallization bumps” (also referred to as “metallized bumps” in the same claim)—“the accumulation of metal layer or layers”—is nonsensical and should be rejected. Defendants’ proposed construction, which is now even broader in their brief than the erroneous one they proposed in the Final Joint Claim Construction Charts (*cf.* Final Joint Claim Construction Charts Ex. B at 2 (D.I. 90) (“the *non-planar* accumulation of a metal layer or layers”)), is inconsistent with any plain meaning of “bump,” and the term’s use in the specification. At bottom, Defendants must take this position reading the term “bump” as a layer because Samsung does not use the accused Novellus electroplating

apparatus to make bumps. The fact, however, that Defendants have no case absent acceptance of their improper construction is not a basis to construe claims, let alone change their meaning.

a. Samsung's construction is based on the intrinsic evidence

The term “bump” is well known in the semiconductor field as explained in Samsung's opening brief. (*See* Samsung Op. Br. at 7-8.) It is a thing—an electrical contact—that is made from a mound of metal deposited on a terminal (in contrast to, for instance, a contact made from a bonded metal wire). That is the construction used by those skilled in the art, and is the only meaning for which the term is used in the patent specification. (*See id.*; *see also* Ex. CC, U.S. Patent No. 4,855,251 at 1:25-27 (“It is necessary to use electroplating in order to mount an Au bump on the Al electrode of the semiconductor substrate.”); Ex. DD, U.S. Patent No. 4,263,606 at 1:6-11 (“The present invention relates to ... a semiconductor device in which metallic protrusions (hereinafter called ‘bumps’) are provided at an electrode wiring section on a semiconductor chip to make electrical connection with external leads.”).)

Defendants make several arguments why Samsung's construction should not be accepted. Defendants first argue that Samsung's construction is “based heavily on extrinsic sources.” (Defendants Op. Br. at 45.) That is not true. Samsung's construction is based on the meaning understood by one skilled in the art and used in the '827 patent. The fact that the extrinsic evidence from the relevant field and the specification uniformly support Samsung's construction simply confirms its correctness. *Verizon Servs. Corp. v. Vonage Holdings Corp.*, 503 F.3d 1295, 1304 (Fed. Cir. 2007) (citing a technical dictionary definition consistent with the specification to support its conclusion). (*See* Samsung Op. Br. at 7-8; *see also* Ex. N at 121; Ex. O at 16.) Notably, Defendants cite no extrinsic or other evidence of the knowledge of one skilled in the field that supports their construction.

Defendants argue that Samsung's construction "limit[s] ... the preferred shape of the bump" and "excludes a preferred use of the metallization bump." (Defendants Op. Br. at 45.) Again, Defendants cite no support for these allegations because there is none. Samsung's proposed construction—a "mound"—reads no "preferred shape" into the claims. Likewise, Defendants' unfounded assertion that Samsung's construction excludes a preferred use of the metallization bump is wrong—all "bumps" described and claimed in the '827 patent are used as contacts (Samsung Op. Br. at 7-8; Ex. A at 6:41-48), consistent with the fact that "bumps" are contacts in this field. (Ex. N, MODERN DICTIONARY OF ELECTRONICS at 121; Ex. O, DICTIONARY OF ELECTRONIC PACKAGING, MICROELECTRONIC, & INTERCONNECTION TERMS at 16.)

Finally, Defendants' argument that Samsung's construction is inconsistent with the language in column 1 (that the invention has "broad utility in many metallization bump processing applications" and is not limited to Figures 3 and 4) is wrong. Figures 3 and 4 show a bump used in a diode. (*See* Ex. A at 3:63-68.) Samsung's construction of "bump," consistent with column 1, is not limited to the use of bumps in diodes, but is properly limited to methods for forming bumps as the claim says. (*See* Ex. A at 6:30-65.)

b. Defendants' construction reads the limitation out of the claims

In contrast to Samsung's construction, Defendants' construction has nothing to do with the definition of "bump" in any context. Indeed, Defendants' construction reads on flat surfaces—the opposite of bump. Of course, a bump is not a layer, and Defendants fail to point to any intrinsic or extrinsic evidence that actually supports their construction reading a "bump" as something other than a "bump."

Defendants first point to column 5, lines 46 to 49, as showing that "multiple layers are deposited to form the metallization bump." (Defendants Op. Br. at 43.) That passage, however,

merely shows that a bump can be made of two layers of different metal. It does not define a bump as a layer; it says a bump can be made of more than one layer.

Defendants next point to the prosecution history as allegedly showing that “the examiner and applicants understood that the deposition of metal layers disclosed metallization bumps.” (Defendants Op. at 44.) To the extent Defendants intended to say that the prosecution history shows one skilled in the art understood “bumps” to mean “metal layers,” it shows no such thing. Rather, it shows that the prior art disclosed everything in applicants’ claims, and that the applicants abandoned most of their claims in the face of the rejection and were forced to limit the claimed process. (*See Samsung Op. Br.* at 5-6.) In fact, the prior art showed cup plating apparatus for manufacturing bumps, layers, and any other electroplated structure. (*See id.*; *see also Ex. B* at B-71.) Nowhere, however, does the prosecution history support Defendants’ construction of “bumps” as being something different than bumps. And certainly there is no basis for arguing that the prosecution provides an alternative construction under the “clear and unambiguous” standard required for the type of argument Defendants make. *See Verizon*, 503 F.3d at 1306; *Miken Composites, L.L.C. v. Wilson Sporting Goods Co.*, 515 F.3d 1331, 1337 (Fed. Cir. 2008) (“[N]othing in the claims or specification indicates, explicitly or implicitly, that the inventor used the term in a novel way or intended to impart a novel meaning to it.”).

Finally, Defendants argue that the claimed “bumps” should be “non-planar.” Of course a “bump” is non-planar because it is a mound of material. Defendants’ construction, at least as articulated in its brief, does not explicitly or implicitly include the requirement that the layer be “non-planar.” And Defendants’ construction is nonsensical to the extent it purports to mean a “non-planar layer.” In sum, Defendants’ construction bears no relationship the term “metallization bump” and should be rejected.

2. “said bumps being of substantially uniform height across said substrate”

Samsung’s Construction	Defendants’ Construction
“Small mounds of metal utilized as contacts having substantially the same height above the semiconductor pad on which they are formed across the wafer.” The preamble is a limitation.	ON Semiconductor notes that this phrase appears only in the preamble of the asserted claim. Because this term does not recite limitations or give life, meaning, and vitality to the claim, no construction is needed. However, if the Court is inclined to construe this, ON Semiconductor contends that the phrase can be understood with the following construction: substantially uniform height: “approximately the same distance between the top of the bump and the top surface of the substrate.”

a. The preamble is a limitation

Defendants’ suggestion that this language in the preamble is somehow not a claim limitation because it “merely states ... the purpose or intended use of the invention” is incorrect. (See Defendants Op. Br. at 4.) The claim language in the preamble is incorporated in the body of the claim in two separate method steps—steps (d) and (e)—and is the only antecedent for the recited “bumps.” (Ex. A at 6:30-48.) As a result, the preamble is a limitation. *See Catalina Mktg. Int’l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002) (explaining preamble may limit claim where there is “dependence on a particular disputed preamble phrase for antecedent basis” or when “the preamble is essential to understand limitations or terms in the claim body”); *Bell Commc’ns Research, Inc. v. Vitalink Commc’ns Corp.*, 55 F.3d 615, 621 (Fed. Cir. 1995) (holding that the preamble in a method claim was a limitation where terms from the preamble were further referenced in the body of the claim). Defendants’ brief simply ignores this critical fact. Moreover, Defendants ignore that they tried and failed to obtain method claims that did not have the preamble limitations, and Defendants did not dispute the rejection. (See Samsung Op. Br. at 7; *see also* Ex. B. at B-35-36, B-63, B-70.) For all these reasons, the preamble is a limitation.

b. Defendants' construction is incorrect

Defendants' proposed construction only defines how to measure the height of a bump—not what a bump is, and not the relationship between the heights of multiple bumps. The proper construction for this term is set forth in Samsung's Opening Brief at 9. In response to Samsung's construction, Defendants make two arguments.

First, Defendants argue that Samsung's construction is wrong because “there is no requirement that the metallization bumps be formed only on a pad.” (Defendants Op. Br. at 42). Defendants are wrong—“bumps” in the semiconductor field are, by definition, located on pads or terminal areas. (*See* Samsung Op. Br. at 7-8; *see also* Ex. N at 121 (bump: “A means of providing connections to terminal areas of a device. A small mound is formed on the device (or substrate) pads, and is utilized as a contact for face-down bonding.”); Ex. O at 16 (bump: “A small mound or hump that is formed on the chip or the substrate bonding pad and is used as a contact in facedown bonding.”).) Thus, Defendants' construction ignores the definition of “bump” that is part of the phrase to be construed. Moreover, Defendants ignore the plain language of the claim, which describes “the growth of said metallization bumps on said terminal areas.” (Ex. A at 6:41-43.) A “terminal area” is a pad. (*See* Ex. EE, MCGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS at 1355 (pad: “2. *See* terminal area.”); *see also id.* at 1904 (terminal area: “[ELECTR] The enlarged portion of conductor material surrounding a hole for a lead on a printed circuit. Also known as land; pad.”).)

In apparent recognition of this fact, Defendants propose to distinguish the “terminal area” claim language, by arguing that it means something different in the '827 patent. (*See* Defendants Op. Br. at 42-43.) Defendants argue that, in the context of the '827 patent, the terminal area can be “the area beneath the oxide in the vicinity of a semiconductor device” or “as on top of the top layer 19, which is also in the vicinity of a terminal of a semiconductor device formed

underneath.” (*See id.*) Not surprisingly, the ’827 patent provides no support for Defendants’ fanciful construction. Instead the ’827 patent discloses that the “bump” or contact is formed over “the top metal terminal region 19” (Ex. A at 1:50-52)—*i.e.*, the “predetermined terminal area” recited in claim 1—exactly as Samsung’s construction provides. Last, Defendants rely on a general purpose dictionary definition of “area” to support their construction. (*See* Defendants Op. Br. at 43.) This definition—plainly inconsistent with both the field of the patent and the use of the term in the claim—is precisely what the Federal Circuit has warned against in its case law after *Phillips*. *See Innogenetics v. Abbott Labs.*, 512 F.3d 1363, 1371 (Fed. Cir. 2008) (*quoting Phillips v. AWH Corp.*, 415 F.3d 1303, 1321 (Fed. Cir. 2005) (“The main problem with elevating the dictionary to such prominence is that it focuses the inquiry on the abstract meaning of words rather than on the meaning of claim limitations within the context of the patent.”)).

Second, Defendants erroneously argue that Samsung’s construction requires “that the bump be formed on a ‘semiconductor’ material”, which is “in direct contravention of the specification which explains the bumps are formed on top of a metal layer.” (*See* Defendants Op. Br. at 43.) To the contrary, Samsung’s construction does not require that the bump be formed on a semiconductor material. Rather, it expressly requires that the bump be formed on the pad or terminal area, exactly as the claims require and the specification shows. (*See* Samsung Op. Br. at 7-8; *see also* Ex. A at 6:41-48.) The construction refers to “semiconductor” because the “substrate” of the claims is a semiconductor wafer. (*See* Ex. A at 4:28-31, 6:34-35.) While no one skilled in the art would ever find this confusing, Samsung has no objection to deleting the word “semiconductor” from the construction to resolve this remaining issue.

3. “altering the flow rate of said solution through said opening”

Samsung’s Construction	Defendants’ Construction
“Changing the volume of electroplating solution per unit of time through the opening of the solution container during the formation of the metallic bumps to control their growth in a predetermined region of the substrate.”	“Changing the volume of electroplating solution per unit of time flowing out of the opening.” ²

The proper construction of this phrase is set forth in Samsung’s Opening Brief at 10. As explained in that brief, the context of this step—that it occurs during the formation of the metallic bumps to control their growth—is necessary to the construction to provide critical context. (*See* Samsung Op. Br. at 10-11.) Defendants recognize that “the invention [process] adjusts the flow rate to adjust ion concentration to control the growth of metallization layers,” but argue that it is unnecessary to define the “altering the flow rate” limitation in the context of the larger claim because “these requirements ... are in fact recited elsewhere in the claim.” (Defendants Op. Br. at 46.) Thus, *Defendants do not argue that Samsung’s construction is wrong*, but rather that it is “unnecessary, potentially confusing to a jury, and would render other limitations of the claim superfluous.” (Defendants Op. Br. at 46.) Defendants are wrong.

If Defendants genuinely do not disagree with Samsung’s construction that the step of altering the flow takes place during the formation of the metallic bumps, they should have no objection to Samsung’s construction. Samsung’s construction does not “seek to incorporate step (e) [controlling bump growth by altering the metallic ion concentration] into step (k) [altering the flow rate].” (Defendants Op. Br. at 46.) Rather, it seeks to clarify—and Defendants appear to

² On the night before the parties’ answering briefs were due, Defendants sought to change a number of their proposed constructions (*see* Ex. FF), further demonstrating that Defendants’ proposed constructions are premised upon their changing infringement theories rather than the intrinsic record. For this term, Defendants’ new construction does not make sense. (*Id.*)

agree—that altering the metallic ion concentration during bump formation as required in step (e) is done, at least in part, by concurrently altering the flow rate in step (k). (*See* Samsung Op. Br. at 11.) That is what Defendants argued to the Patent Office and is consistent with the specification. (*See id.*) Such a construction does not render any claim language superfluous; it resolves an issue, which is why Courts construe claims. *See, e.g., O2 Micro Int’l Ltd. v. Beyond Innovation Tech. Co.*, --- F.3d ----, Nos. 2007-1302, 2007-1303, 2007-1304, 2008 WL 878924 at *7 (Fed. Cir. Apr. 3, 2008). Significantly, the Federal Circuit has recently rejected Defendants’ approach of construing a phrase without reference to the relevant context where there is a dispute as to that context. *See id.* at *8 (“In this case ... claim construction requires the court to determine what claim scope is appropriate in the context of the patents-in-suit.”). Accordingly, Samsung’s construction—apparently not disputed by Defendants—should be accepted.

II. U.S. PATENT NO. 5,361,001

A. Defendants’ Proposed Constructions Must Be Rejected Because They Have No Relation To The Invention Described In The ’001 Patent

Defendants admit that “[t]he ’001 patent is generally directed to methods for performing analog trimming.” (Defendants Op. Br. at 5.) And as discussed in Samsung’s opening brief, the ’001 patent purports to improve upon prior art analog trimming techniques by employing a two-step process consisting of: (i) *previewing* an analog trim; and then (ii) *permanently* setting the trim. (Samsung Op. Br. at 17-19.) Defendants’ proposed constructions, however, are designed to broaden the scope of the patent to circuitry having nothing to do with analog trimming or the allegedly new two-step process. But the Federal Circuit has repeatedly held that claims may not be construed in that manner. *See, e.g., Nystrom v. TREX Co.*, 424 F.3d 1136, 1145-46 (Fed. Cir. 2005) (“Broadening of the ordinary meaning of a term in the absence of support in the intrinsic record indicating that such a broad meaning was intended violates the principles articulated in

Phillips.”); *Old Town Canoe Co. v. Confluence Holdings Corp.*, 448 F.3d 1309, 1318 (Fed. Cir. 2006) (“[The patentee] is not entitled to a claim construction divorced from the context of the written description and prosecution history.”); *Netword, LLC v. Centraal Corp.*, 242 F.3d 1347, 1352-53 (Fed. Cir. 2001). Defendants’ proposed constructions should thus be rejected.

B. Proper Construction Of The Disputed Terms Of The ’001 Patent

1. “analog trimming”

Samsung’s Construction	Defendants’ Construction
“Making a fine adjustment of capacitance, inductance, or resistance of an analog circuit component.” The preamble is a limitation.	ON Semiconductor notes that this term appears only in the preamble of the asserted claim. Because this term does not recite limitations or give life, meaning, and vitality to the claim, no construction is needed. If the Court is inclined to construe this term, however, ON Semiconductor contends that it should be construed as follows: “modifying an analog value or quantity.”

a. “analog trimming” is a claim limitation

As discussed in Samsung’s opening brief, the ’001 patent inventor repeatedly and unambiguously represented to the Patent Office and the public that the invention was direct to “analog trimming.” For example, the title of the patent is “Circuit and Method of Previewing Analog Trimming,” the entire abstract of the invention relates to “[a]n analog trim circuit,” and the “Background of the Invention” states that the invention relates to analog trim circuits:

The present invention relates in general to analog trim circuits and, more particularly, to a technique of previewing the analog trim results before blowing a fuse to lock the trim in place.

(Ex. C at 1:6-10; *see also id.* at 4:31-32 (“A key feature of the present invention is to preview trimming...”).) Nothing in the patent suggests that the scope is any broader. Defendants’ new litigation position—that the patent is *not* limited to analog trimming—must therefore be rejected. *Netword*, 242 F.3d at 1352 (“Although the specification need not present every embodiment or permutation of the invention and the claims are not limited to the preferred embodiment of the

invention, *neither do the claims enlarge what is patented beyond what the inventor has described as the invention.*”) (citation omitted).

Defendants’ assertion that the “analog trimming” language in the preamble is not “necessary to give ‘life, meaning, and vitality’ to the claim” is directly contradicted by the inventor’s description of the invention in the specification, as discussed above, and thus must be rejected. (See Samsung Op. Br. at 15-16.) Indeed, the Federal Circuit recently addressed a nearly identical issue, and found that a preamble term that the inventor emphasized as a feature of the invention, but which does not appear in the body of the claims, is a claim limitation:

The terms at issue here clearly recite a necessary and defining aspect of the invention, specifically its portability. The written description and applicants’ statements during prosecution emphasize this feature of the invention, yet this limitation does not appear in the body of the claims. As a result, this court finds that the terms “portable computer” and “portable computer microprocessing system” limit the scope of the asserted claims.

Computer Docking Station Corp. v. Dell, Inc., 519 F.3d 1366, 1375 (Fed. Cir. 2008); compare *Symantec Corp. v. Computer Assocs. Int’l, Inc.*, --- F.3d ----, Nos. 2007-1201, 2007-1239, 2008 WL 1012443 at *4 (Fed. Cir. Apr. 11, 2008) (finding that a claim preamble was not a separate limitation because, unlike here, it was “merely duplicative of the limitations in the body of the claim.”). Defendants’ attempt to broaden the claims beyond what is disclosed in the specification should thus be rejected. *Nystrom*, 424 F.3d at 1144-45 (“However, as explained in *Phillips*, [the patentee] is not entitled to a claim construction divorced from the context of the written description and prosecution history.”).

b. Defendants’ proposed construction is inconsistent with the ordinary and customary meaning and the intrinsic record

Defendants’ proposed construction is also incorrect. Indeed, Defendants provide no support for their assertion that the ordinary meaning of “analog trimming” is “*modifying* an

analog value.” For example, Defendants’ cited dictionary definition does not support their construction—the portions of that definition that they omitted from their brief (Defendants Op. Br. at 8) expressly state that it is inapplicable to the electronic circuitry at issue here:³

Defendants’ Ex. 2 at 1258-59 (defining “trim” as “**4a(1):** to cause (*as to ship*) to assume a desirable position in the water by arrangement of ballast, cargo, or passengers **(2):** to adjust (*as an airplane or submarine*) for horizontal movement or for motion upward or downward **b:** to adjust (*as cargo or a sail*) to a desired position.”).

(Defendants Op. Br. Ex. 2 at 1258-59.) The Federal Circuit has warned against reliance upon such out-of-context dictionary definitions. *See Phillips*, 415 F.3d at 1322 (“[W]e have stated that ‘*a general-usage dictionary cannot overcome art-specific evidence of the meaning*’ of a claim term.”) (citation omitted). *Samsung*, to the contrary, provided standard definitions from several art-specific dictionaries, demonstrating that the ordinary meaning is “making a fine adjustment of capacitance, inductance, or resistance of an analog circuit component.” (*Samsung Op. Br.* at 13-14; *see also* Ex. GG, U.S. Patent No. 4,870,472 at 1:14-16 (“The term ‘trimming’ is used to mean the fine adjustment of resistance, capacitance, or inductance in a circuit.”).)

Defendants’ assertion that the specification supports their position is also incorrect. Indeed, Defendants admit that “the term ‘analog trimming’ is used in the specification to refer to *adjusting* an analog value or quantity.” (Defendants’ Op Br. at 7.) Yet Defendants seek to change the meaning to “modifying,” in an attempt to broaden the scope of the term “trimming” from “adjusting” a value to selecting an entirely different value. Nothing in the intrinsic or extrinsic evidence supports that proposed change, which must be rejected. *Nystrom*, 424 F.3d at 1145-46 (“Broadening of the ordinary meaning of a term in the absence of support in the

³ Moreover, even Defendants’ own dictionary definition states that “trim” means “to adjust” rather than to modify, consistent with *Samsung*’s proposed construction.

intrinsic record indicating that such a broad meaning was intended violates the principles articulated in *Phillips*.”). To the contrary, all the evidence of record supports Samsung’s proposed construction, as set forth in Samsung’s opening brief. (Samsung Op. Br. at 13-16.)

Additionally, Defendants’ attempt to escape the ordinary and customary meaning of “analog trimming” by arguing that the “patent teaches a **large** (not a ‘fine’) **range** of adjustments” must be rejected. Whether an “adjustment” is large or fine does not depend on the “range,” but rather, on the amount of the adjustment relative to the circuit component being adjusted (*e.g.*, a 20,000 ohm resistor could be finely adjusted by 10 to 2,560 ohms). That is exactly how the term is used in the art. (*See* Ex. P at 554 (defining “trimming” as “***fine adjustment*** of capacitance, inductance, or resistance ***of a component*** during manufacture or after installation in a circuit.”).) The patent uses the term in the same way—analog trimming is used to adjust the values of “the basic building blocks [that] are usually not accurately controlled by the manufacturing process.” (Ex. C at 1:10-12.) For example, in the “Background of the Invention” section, the patent describes the process as “***fine*** trimming.” (Ex. C at 1:41.) And the only numerical example provided by the patent is that the 10 to 2,560 ohm trimming is used to compensate for “values of resistance and capacitance” that “***vary by 5%-10%***.” (Ex. C at 3:2-6.) Defendants’ assertion that “trimming” refers to large adjustments thus has no support in the intrinsic or extrinsic record and must be rejected. *Atofina v. Great Lakes Chem. Corp.*, 441 F.3d 991, 996 (Fed. Cir. 2006) (“Our primary focus in determining the ordinary and customary meaning of a claim limitation is to consider the intrinsic evidence of record, viz., the patent itself, including the claims, the specification and, if in evidence, the prosecution history, from the perspective of one of ordinary skill in the art.”).

Defendants’ remaining issues are similarly unfounded. For example, Defendants’ assertion that the “fine adjustment” may be made to something other than the “capacitance,

inductance, or resistance” of a circuit component is contrary to the ordinary meaning of the term. (See Samsung Op. Br. at 13-14.) The specification does not disclose anything different—the “voltage, frequency, and gain” values pointed to by Defendants all depend upon a “capacitance, inductance, or resistance.” Indeed, the patent explains that “frequency” is adjusted with the “trimmable *resistor* ladder.” (Ex. C at 2:63-3:6.) And Defendants’ assertion that “analog trimming” refers to something other than adjusting the value of an “analog circuit component” disregards the ordinary meaning of the term. (See Samsung Op. Br. at 13-14.) The problem addressed by the patent is that “the basic building blocks [e.g., circuit components] are usually not accurately controlled by the manufacturing process.” (Ex. C at 1:10-12.) It is clear from the claim term itself (“*analog* trimming”) that those components are analog components, not digital components. Accordingly, Defendants’ construction is inconsistent with the ordinary meaning and the intrinsic record, and should be rejected. *Phillips*, 415 F.3d at 1316 (“The construction that stays true to the claim language and most naturally aligns with the patent’s description of the invention will be, in the end, the correct construction.”) (citation omitted).

2. “control signal”

Samsung’s Construction	Defendants’ Construction
“A signal that enables or disables conduction through an associated passive element of a trim circuit.”	“A signal that conveys information about regulation or guidance.”

As explained in Samsung’s opening brief, the claim and specification both provide that the “control signal” enables and disables conduction through an associated element of the trim circuit. (Samsung Op. Br. at 16-17.) The patent discloses no other function for the “control signal.” Defendants’ attempt to eliminate that concept from the claims is thus improper. *On Demand Mach. Corp. v. Ingram Indus., Inc.*, 442 F.3d 1331, 1338 (Fed. Cir. 2006), *cert. denied*, 127 S.Ct. 683 (2006) (“In general, the scope and outer boundary of claims is set by the patentee’s

description of his invention.”); *Nystrom*, 424 F.3d at 1144-45 (“However, as explained in *Phillips*, [the patentee] is not entitled to a claim construction divorced from the context of the written description and prosecution history.”).

Moreover, Defendants’ proposed construction improperly eliminates the **control** aspect from the claimed “control signal,” and instead converts that signal into an **information** signal. That **control** functionality, however, is what defines the signal, as this Court has held in connection with at least one other patent in the electronics field:

The term “**control signal**” appears within dependent claim 6 of the ’446 patent, which provides, “the transceiver further includes circuitry for transmitting a control signal in the high frequency band to the signal interface.” ***This term is construed as “a signal that prompts the signal interface to perform a function.” This construction is established by looking to the plain meaning of “control signal” as it appears in the claim. This meaning is also consistent with the intrinsic evidence.*** The ordinary meaning of the term “control” is the “ability to manage or direct.” The ordinary meaning of the term “signal” is “[a]n electrical wave used to convey information.” In the context of the claim, the control signal is sent to the signal interface. The common specification provides that the term control signal refers to prompting a device, such as a “targeted converter box,” and/or an “RF video receiver” using infrared transmitters and/or “transceiver/switch 400”, to perform a function.

Inline Connection Corp. v. AOL Time Warner Inc., 302 F. Supp. 2d 307, 327-28 (D. Del. 2004).

Defendants’ attempt to define “control signal” to relate to something other than what is disclosed in the specification is thus improper and should be rejected. *Phillips*, 415 F.3d at 1316 (“The importance of the specification in claim construction derives from its statutory role. The close kinship between the written description and the claims is enforced by the statutory requirement that the specification describe the claimed invention in ‘full, clear, concise, and exact terms.’”), quoting 35 U.S.C. § 112 ¶ 1; *Old Town Canoe*, 448 F.3d at 1318 (“[The patentee] is not entitled to a claim construction divorced from the context of the written description and prosecution history.”).

3. “fixed value” and “setting said control signal to a fixed value”

Claim Term	Samsung’s Construction	Defendants’ Construction
“fixed value”	“A value that does not change.”	“A state that is not fluctuating or varying during a specified or predetermined time or condition.”
“setting said control signal to a fixed value”	“Permanently setting the state of the control signal.”	The Court need not construe this, however, if the Court is inclined to construe this, ON Semiconductor contends that the phrase can be understood with the following constructions: fixed value; control signal.

As discussed in Samsung’s opening brief, the entire focus of the ’001 patent is a two step process consisting of: (i) *previewing* an analog trim; and then (ii) *permanently* setting the trim to a fixed value. (Samsung Op. Br. at 17-19.) Nowhere in the specification is there any suggestion that “fixed value” means anything other than permanent.⁴ Indeed, the patent explicitly describes the “fixed values” set in the second step as “permanent”:

*Once the appropriate fuses are blown, the latches in the control circuits are set to logic zero so that **the state of the fuses alone determines** the state of the control signal and therefore **the permanent trim**. The control signals from control circuits 24, 28 and 32 are **thus set to a fixed value** by blowing the selected fuses 46 in the control circuits after removal of the data signal at terminal 22.*

(Ex. C at 4:10-17; *see also* Ex. C at 2:3-5, 4:29-30, 4:40-47.) Accordingly, Defendants’ attempt to obtain a broader construction for purposes of litigation must be rejected. *Nystrom*, 424 F.3d at 1145-46 (“Broadening of the ordinary meaning of a term in the absence of support in the intrinsic record indicating that such a broad meaning was intended violates the principles articulated in *Phillips*.”); *Old Town Canoe*, 448 F.3d at 1318.

⁴ Defendants’ citation to the specification (Defendants Op. Br. at 13 (e.g., col. 2:49-52)) has nothing to do with the “fixed value” in the second step. Rather the cited text describes the “data signal” used in the *previewing* step.

Moreover, Defendants' proposed construction must be rejected because it reads the word "fixed" out of the claim. For example, claim 4 requires the two-step process discussed above:

activating said control signal in response to a data signal *to enable and disable* said conduction through said passive element, ... and

setting said control signal to a fixed value after removal of said data signal.

(Ex. C at 5:34-6:7.) If the "fixed value" could change, as Defendants propose, then the word "fixed" could be simply stricken from the claim without changing the scope, *i.e.*, "setting said control signal to a value" would have exactly the same meaning. Defendants' proposed construction is thus clearly incorrect for this additional reason. *See, e.g., Ethicon Endo-Surgery, Inc. v. U.S. Surgical Corp.*, 93 F.3d 1572, 1578 (Fed. Cir. 1996).

Finally, Defendants' argument that dependent claim 5 suggests that "fixed" means something other than "permanent" is confusing at best. That claim merely restricts *how* the fixed value is set—"blowing a fuse to set said control signal at said fixed value." (Ex. C at 6:11-12.) It does not modify the meaning of "fixed value" in any way, and in fact uses the phrase "*said* fixed value." Dependent claim 5 thus further illustrates that the "fixed value" is a "permanent value," consistent with Samsung's proposed construction. Accordingly, Defendants' proposed construction is inconsistent with the claim and description of the invention in the specification, and must be rejected. *Phillips*, 415 F.3d at 1316 ("The construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction.") (citation omitted).

III. U.S. PATENT NO. 5,563,594

A. Defendants' Proposed Constructions Improperly Disregard The Entire Context Of The '594 Patent

Asserted claim 8 of the '594 patent is directed to controlling the phase of a data transfer signal to set the proper timing for writing data to a register of a parallel-to-serial data converter.

(See Samsung Op. Br. at 19-33; Ex. E at 1:7-10, 6:13-15, 7:65-8:12, Abstract, Title.) Defendants, however, seek to broaden the scope of the patent beyond the plain claim language and description in the specification to encompass technologies having no relation to the stated scope of the invention, by interpreting the claim language in a manner that is completely divorced from the intrinsic record. The Federal Circuit has repeatedly held following its *en banc* decision in *Phillips* that such approach is wrong. See, e.g., *Nystrom*, 424 F.3d at 1144-45 (“However, as explained in *Phillips*, [the patentee] is not entitled to a claim construction divorced from the context of the written description and prosecution history.”); *Old Town Canoe*, 448 F.3d at 1318 (“[The patentee] is not entitled to a claim construction divorced from the context of the written description and prosecution history.”). Accordingly, as set forth below, the Court should construe the claims in view of the intrinsic record, as proposed by Samsung.

B. Proper Construction Of The Disputed Terms Of The '594 Patent

1. “a register having an input coupled for receiving parallel input data and having an output”

Samsung's Construction	Defendants' Construction
“A storage circuit that receives each bit of the input data simultaneously over several input lines.”	It is ON Semiconductor's position that the Court need not construe this entire phrase. Instead, ON Semiconductor believes that the phrase can be understood according to the plain and ordinary meaning of its constituent terms or words. If the Court is inclined to construe this phrase, ON Semiconductor contends that it can be understood simply by construing the following terms: register: “a device capable of retaining or storing information.”; coupled.

Defendants argue that the Court should not construe the entire disputed term, but rather, only the individual words “register” and “coupled” in isolation. (Defendants Op. Br. at 29-30.) As recently noted by the Federal Circuit, however, that is not a proper approach because it may lead to an “unjustifiably broad” construction:

The construction reached by the district court in this case is unjustifiably broad because the information database as claimed

requires searchability and retrievability beyond mere accessibility. *In isolation, the term ‘information database’ suggests a very broad coverage. In context, however, this claim term repeatedly appears within a framework that requires referencing, embedding, assigning, and transmitting portions of the database.* These database functions and capabilities, in turn, presuppose searchability and retrievability.

Finisar Corp. v. DirecTV Group, Inc., --- F.3d ----, Nos. 2007-1023, 2007-1024, 2008 WL 1757675 at *5 (Fed. Cir. Apr. 18, 2008); *see also On Demand*, 442 F.3d at 1344 (“Care must be taken lest word-by-word definition, removed from the context of the invention, leads to an overall result that departs significantly from the patented invention.”). The context in which the words are used in the claim is paramount, especially where, as here, the claim language further defines the structure of the claimed register. *See Phillips*, 415 F.3d at 1314 (“To begin with, the context in which a term is used in the asserted claim can be highly instructive.”).

Moreover, the parties dispute whether or not the register must be connected to receive each bit of input data simultaneously over several input lines. That dispute should be resolved by the Court. *O2 Micro*, 2008 WL 878924 at *9 (“When the parties present a fundamental dispute regarding the scope of a claim term, it is the court’s duty to resolve it.”). In that regard, Defendants improperly seek to read the “receiving parallel input data” limitation out of the claim by asserting that it does *not* mean receiving each bit of the input data simultaneously over several input lines. But that is the exact meaning of the phrase, as discussed in Samsung’s opening brief. (Samsung Op. Br. at 21-22; *see also* Ex. Q at 1571 (defining *parallel input/output* as “the *simultaneous transmission of data* to and from a computer *through multiple wires*.”).) The specification uses the phrase in the same way. (Ex. E at 2:9-20, 4:15-16, 5:41-42.) Defendants’ attempt to erase that limitation by arguing that it has a different meaning—which they do not even identify—must be rejected. *Nystrom*, 424 F.3d at 1145-46 (“Broadening of the ordinary

meaning of a term in the absence of support in the intrinsic record indicating that such a broad meaning was intended violates the principles articulated in *Phillips*.”).

Finally, Defendants attempt to divert the focus away from the actual dispute, discussed above, by arguing about other portions of the term that are either not disputed or dealt with separately elsewhere. For example, the term “coupled” is addressed below (*see* page 24), so Samsung did not separately address that word in connection with this claim term. And the fact that the register has an “output” is not in dispute. Nonetheless, to address Defendants’ objections to these issues, the following modified construction would be appropriate:

A storage circuit coupled for receiving each bit of the input data simultaneously over several input lines, and having an output.

In sum, the key dispute at issue—and the limitation that Defendants improperly seek to read out of the claim—is that the claimed “register ... coupled for receiving parallel input data” must be coupled for receiving each bit of the input data simultaneously over several input lines. Accordingly, the Court should adopt Samsung’s proposed construction. *Phillips*, 415 F.3d at 1312 (“[I]t is ‘unjust to the public, as well as an evasion of the law, to construe it in a manner different from the plain import of its terms.’”) (citation omitted).

2. “a multiplexer having an input coupled to said output of said register for providing serial data”

Samsung’s Construction	Defendants’ Construction
“A circuit that sequentially transmits the parallel input data from the register one bit at a time over a single output line.” ⁵	The Court need not construe this, however, if the Court is inclined to construe this, ON Semiconductor contends that the phrase can be understood with the following construction: multiplexer: “a device capable of manipulating multiple streams of digital information.”

⁵ Defendants incorrectly state Samsung’s proposed construction of the term “coupled” in their chart on page 32 of Defendants’ opening brief. Samsung’s correct position is identified below.

As with the prior phrase, Defendants insist upon construing only individual words in isolation, and thereby propose an “unjustifiably broad” construction. *Finisar*, 2008 WL 1757675 at *5. The flaw in Defendants’ approach is readily apparent by their own admission that their construction “covers both types of multiplexers”—multiplexers that “convert parallel data to serial” and multiplexers that convert “serial data to parallel.” While the specification describes both embodiments, the claim at issue here (claim 8) is directly *only* to the “parallel to serial” converter embodiment:

8. A data conversion circuit, comprising:

a register having an input coupled for receiving *parallel input data* and having an output;

a *multiplexer* having an input coupled to said output of said register *for providing serial data*; ...

(Ex. E at 7:65-8:2.) The plain language of claim 8 thus requires “parallel” data input, and “serial” data output, *i.e.*, it is a “parallel to serial” converter.⁶ Defendants’ proposed construction that encompasses a “serial to parallel” converter is thus inconsistent with the claim language and must be rejected for that reason alone. *Interactive Gift Express, Inc. v. Compuserve Inc.*, 256 F.3d 1323, 1336 (Fed. Cir. 2001) (“Such a construction is illogical and does not accord with the plain import of the claim language.”); *Phillips*, 415 F.3d at 1316 (“The construction that stays true to the claim language and most naturally aligns with the patent’s description of the invention will be, in the end, the correct construction.”) (citation omitted).

Defendants’ proposed construction is also incorrect because it reads out the parallel to

⁶ Other unasserted claims are directed to the “serial to parallel” converter embodiment. For example, claim 14 requires “a *multiplexer* having an input coupled *for receiving serial input data* and having an output” and “a *register* having an input coupled to said output of said register [sic] *for providing prarllel [sic] data*.” (Ex. E at 9:19-23.)

serial data conversion explicitly required by the claims and described throughout the specification. In that regard, the claimed multiplexer does not simply “manipulat[e] multiple streams of digital information” as advocated by Defendants, but rather, takes the parallel input data from the register and provides serial data output. (Ex. E at 7:65-8:2.) Notably, other devices such as printers, computers, televisions, etc., can “manipulat[e] multiple streams of digital information” and would thus constitute “multiplexers” under Defendants’ proposed construction, which is clearly incorrect. *Nystrom*, 424 F.3d at 1145-46 (“Broadening of the ordinary meaning of a term in the absence of support in the intrinsic record indicating that such a broad meaning was intended violates the principles articulated in *Phillips*.”).

Finally, Defendants’ proposed construction must be rejected because it ignores the fundamental difference between “parallel data” and “serial data” that is well understood in the art and described in the specification. (See Samsung Op. Br. at 21-24.) Specifically, as discussed above and in Samsung’s opening brief, “parallel input data” is the simultaneous input of data through multiple wires. The term “parallel data” does not mean any “multiple streams of digital information” as proposed by Defendants in connection with the term “multiplexer” (Defendants Op. Br. at 32), but rather relates to a related group of data elements acted upon simultaneously:

- ***Parallel***: “Pertaining to the type of operation in a computer when *all elements in an information item* (bits in a word, e.g.,) *are acted upon simultaneously rather than serially (one at a time)*.” (Ex. S, THE ILLUSTRATED DICTIONARY OF ELECTRONICS at 480.)
- ***Parallel***: “*Simultaneous transmission of*, storage of, or logical operations on *the parts of a word, character, or other subdivision of a word* in a computer, using separate facilities for the various parts.” (Ex. R, MCGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS at 1443.)

The claimed “serial data” on the other hand—which Defendants’ seek to read out of the claim—is just the opposite. Indeed, as discussed in Samsung’s opening brief, “serial data” is “data that is transmitted sequentially, one bit at a time,” “as opposed to parallel handling.” (Samsung Op.

Br. at 23; *see also* Ex. Q at 1960.) Defendants' attempt to read that limitation out of the claim is improper and should be rejected. *Ethicon*, 93 F.3d at 1578.

3. "coupled"

Samsung's Construction	Defendants' Construction
"Directly connected." ⁷	"Linked together."

Defendants' contention that the term "coupled" as used in the '594 patent encompasses anything that is "linked together," *e.g.*, both direct and indirect connections, is clearly incorrect in view of the intrinsic record. For example, as discussed in Samsung's opening brief, the patent specification repeatedly and consistently uses the term "coupled" to refer to *direct* connections, as proposed by Samsung. (Samsung Op. Br. at 24-26.) Indeed, Defendants admit that "the specification describes certain direct connections that it characterizes as couplings." (Defendants Op. Br. at 29.) Nothing in the intrinsic record suggests that "coupled" means anything different, so broadening the term as proposed by Defendants is improper. *Phillips*, 415 F.3d at 1316 ("The construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction.") (citation omitted).

Moreover, Defendants' proposed construction must be rejected because it effectively eliminates the term "coupled" from the claim—in any circuit, *every* circuit element is "linked together" with every other circuit element. For example, as described in the specification and illustrated in Fig. 1, the input of "Register 14" is *coupled* to the output of "CMOS-ECL Translator 12" for receiver 32-bit parallel input data. Similarly, the input of "Multiplexer 16" is

⁷ In view of Defendants' argument in their opening brief, it is clear that there is a dispute concerning the scope of this term. It should therefore be construed. *O2 Micro*, 2008 WL 878924 at *9 ("When the parties present a fundamental dispute regarding the scope of a claim term, it is the court's duty to resolve it.").

coupled to the output of “Register 14.”

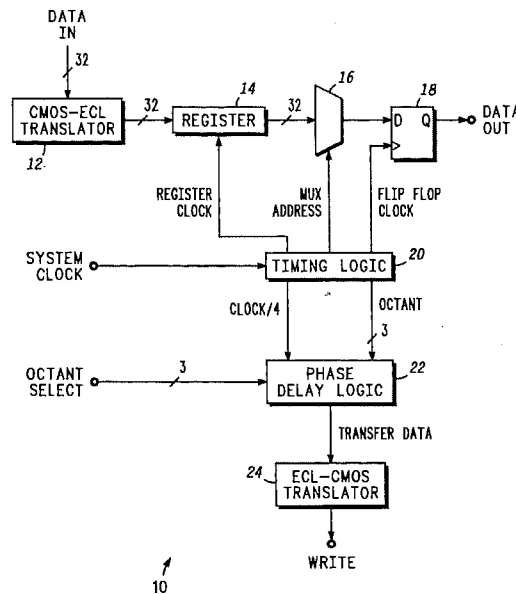


FIG. 1

Under Defendants’ proposed construction, however, which includes *indirect* connections, the input of “Multiplexer 16” is also “coupled” to every other circuit element (e.g., “CMOS-ECL Translator 12,” “Timing Logic 20,” “System Clock,” “Flip Flop 18,” “Phase Delay Logic 22,” “Octant Select,” and “ECL-CMOS Translator 24”). Asserted claim 8, however, clearly does not use the term “coupled” so broadly:

8. A data conversion circuit, comprising:

a **register having an input coupled for receiving parallel input data** and having an output;

a **multiplexer having an input coupled to said output of said register** for providing serial data; ...

(Ex. E at 7:65-8:2.) Defendants’ proposed construction is thus clearly contrary to the plain language of the claim and use of the term “coupled” in the specification, and improperly reads out the very circuit connections required by the claims. *See, e.g., Ethicon*, 93 F.3d at 1578 (“If, as [the patentee] argues, ‘connected to’ should be read broadly to include elements which are connected directly or indirectly, then this language would read on a lockout mechanism located

anywhere in the surgical stapler, and the ‘connected to’ limitation would be meaninglessly empty.”); *Forest Labs., Inc. v. Abbott Labs.*, 239 F.3d 1305, 1313 (Fed. Cir. 2001).

The *only* thing Defendants rely upon to expand the construction of “coupled” beyond its use in the intrinsic record is clearly inapplicable extrinsic evidence. For example, Defendants rely upon a dictionary definition of “coupling” that relates to an interconnection between different *circuits*. (Defendants Op. Br. at 24 (“For example, the Modern Dictionary of Electronics defines ‘coupling’ as ‘[a] mutual relation *between two circuits* that permits energy transfer from one to the other.’”).) The patent, however, uses the term “coupled” to define the interconnection between *circuit components*, i.e., the components of a single circuit. (See Samsung Op. Br. at 24-26.) Defendants’ extrinsic dictionary definition is thus not applicable to the context in which the patent uses the term “coupled,” and must be rejected. See, e.g., *Old Town Canoe*, 448 F.3d at 1318 (“[The patentee] is not entitled to a claim construction divorced from the context of the written description and prosecution history.”); *Network Commerce, Inc. v. Microsoft Corp.*, 422 F.3d 1353, 1360 (Fed. Cir. 2005) (“Under that construction, any part of a system involved in the transfer of data from one computer to another would be a download component. This is not a tenable theory in light of the specification.”).

4. “comparator”

Samsung’s Construction	Defendants’ Construction
“A device whose output signal depends on the result of comparing two data items.”	“An electronic device that receives input from two or more sources and provides an output responsive to a comparison of the inputs.”

Samsung’s proposed construction of the term “comparator” adopts verbatim the ordinary and customary meaning. (See Ex. S at 127 (defining a “comparator” as “a device whose output signal depends on the result of its comparing two data items.”).) The claims and specification use the term in exactly the same way. (Samsung Op. Br. at 26-27.)

Defendants nonetheless seek to change that ordinary and customary meaning in two significant ways. First, Defendants contend that the claimed comparator provides an output responsive to “two *or more* sources.” (Defendants Op. Br. at 33.) The explicit claim language, however, requires that the output depend upon *two* input signals:

a comparator having first and second inputs and an output, said first input receiving a first control signal, said second input receiving a second control signal, said output providing a compare signal having a first state when said first and second control signals match...

(Ex. E at 8:3-7.) Accordingly, even if a “comparator” could have more than two inputs as Defendants contend, the claim explicitly requires that the output signal depend upon the *two* input control signals recited by the claim. Defendants’ attempt to change that plain claim language should be rejected. *Phillips*, 415 F.3d at 1316 (“The construction that stays true to the claim language and most naturally aligns with the patent’s description of the invention will be, in the end, the correct construction.”) (citation omitted).

Second, Defendants’ proposed construction provides that the inputs are “sources” rather than “data items.” The reason for Defendants’ change is significant—Defendants seek to refer to a circuit’s synchronization of data transfers as “comparisons” between data signals and “clock signals,”⁸ and thus encompass circuitry other than comparators—such as registers, latches, and flip-flops—within the scope of the term “comparator.” That construction is thus contrary to the ordinary and customary meaning of the term. (See Samsung Op. Br. at 26-27 (providing technical dictionary definitions demonstrating that inputs are data signals, *i.e.*, not clock signals).) Moreover, nothing in the specification supports Defendants’ attempt to broaden the

⁸ As discussed below (p.32), a “clock signal” is “a signal consisting of a series of pulses used for synchronizing the data conversion circuit.”

ordinary meaning of “comparator” in that manner. Indeed, consistent with the claim and ordinary meaning of the term, the specification provides that *two input data items* are provided to the comparator—the “Octant” and “Octant Select” signals:

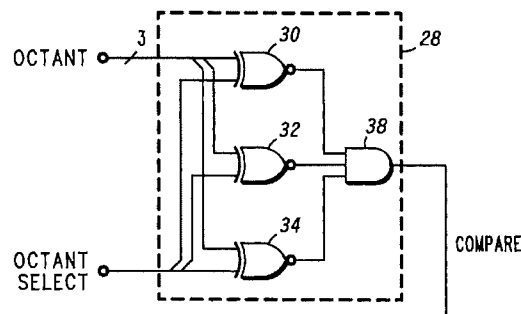
If the **OCTANT signal** matches the **OCTANT SELECT signal**, AND gate 38 receives all logic ones and provides a logic one COMPARE signal. Otherwise, the COMPARE signal from AND gate 38 is logic zero.

(Ex. E at 3:40-43.) Defendants’ proposed construction must therefore be rejected for this additional reason. *Old Town Canoe*, 448 F.3d at 1318 (“[The patentee] is not entitled to a claim construction divorced from the context of the written description and prosecution history.”).

Finally, Defendants’ efforts to change the ordinary and customary meaning of the term “comparator” lead to their technically incorrect assertion that “the comparator described in the specification of the ’594 patent is actually a six-input comparator that receives input from six digital signals.” (Defendants Op. Br. at 33.) Contrary to that assertion, the specification clearly provides that there are *two* parallel 3-bit data signals input to comparator 28:

When the 3-bit OCTANT signal matches the externally-supplied 3-bit OCTANT SELECT signal, the COMPARE signal is asserted as logic one.

(Ex. E at 4:1-4.) That is illustrated in the following excerpt of Fig. 2:



The intrinsic record thus discloses two input data items, not six as suggested by Defendants. And not surprisingly, the asserted claim requires the same *two* input data signals, as discussed above. Defendants’ construction must therefore be rejected as contrary to the ordinary meaning

and the intrinsic record. *Primos, Inc. v. Hunter's Specialties, Inc.*, 451 F.3d 841, 847-48 (Fed. Cir. 2006) (“In ascertaining the ordinary and customary meaning of a claim term, a court’s primary focus should be on the intrinsic evidence of record, *viz.*, the claims, the specification, and, if in evidence, the prosecution history.”) (citation omitted).

5. “control signal”

Samsung’s Construction	Defendants’ Construction
“A signal for controlling the phase of the transfer data signal.”	“A signal that conveys information about regulation or guidance.”

As discussed in Samsung’s opening brief (Samsung Op. Br. at 28-29), the entire focus of the ’594 patent is controlling the phase of the transfer data signal:

The present invention relates in general to digital timing circuits and, more particularly, *to controlling the phase of a data transfer signal* to set the proper timing for reading or writing to a data register.

(Ex. E at 1:7-10; *see also id.* at 6:13-15, Abstract, Title.) That phase is **controlled** using the “Octant” and “Octant Select” control signals. (Ex. E at 2:62-64, 3:13-18, 3:40-42, 4:1-4, 6:1-3, 8:3-12, Figs. 1-2.) Indeed, the patent discloses no other function for the “control signals,” so they cannot be construed to mean something different. *On Demand*, 442 F.3d at 1338 (“In general, the scope and outer boundary of claims is set by the patentee’s description of his invention.”). Defendants’ attempt to eliminate that concept from the claims is thus improper. *See Nystrom*, 424 F.3d at 1144-45.

Moreover, as with the term “control signal” in the ’001 patent discussed above, Defendants’ proposed construction improperly eliminates the **control** aspect out of the claimed “control signals,” and instead converts those signals to **information** signals. That **control** functionality, however, is what defines the signal. *See Inline Connection*, 302 F. Supp. 2d at 327-28. Accordingly, Defendants’ attempt to define “control signal” to relate to something other than what is disclosed in the specification is improper and should be rejected. *Old Town Canoe*,

448 F.3d at 1318 (“[The patentee] is not entitled to a claim construction divorced from the context of the written description and prosecution history.”).

6. “first and second control signals match”

Samsung’s Construction	Defendants’ Construction
“The data represented by the first and second control signals is the same.”	The Court need not construe this, however, if the Court is inclined to construe this, ON Semiconductor contends that the phrase can be understood with the following constructions: control signals: (separately construed); match: “corresponding, suitably associated, or harmonious”

Defendants assert the frivolous position that “first and second control signals match” even when those signals are *different*. (Defendants Op. Br. at 37-38.) They do so by taking a generic dictionary definition completely out of the context of the technology at issue, which the Federal Circuit has held is improper:

Under *Phillips*, *the rule that ‘a court will give a claim term the full range of its ordinary meaning,’ does not mean that the term will presumptively receive its broadest dictionary definition* or the aggregate of multiple dictionary definitions. Rather, in those circumstances where reference to dictionaries is appropriate, *the task is to scrutinize the intrinsic evidence in order to determine the most appropriate definition*.

Free Motion Fitness, Inc. v. Cybex Int’l, Inc., 423 F.3d 1343, 1348-49 (Fed. Cir. 2005) (citation omitted).

Following the proper claim construction procedure—construing the claim term in view of the intrinsic record—there is no reasonable dispute that the term “match” means the *same*. For example, the specification clearly states that two signal “match” when their data values are the same, and do *not* “match” when they are different:

At the first rising edge of CLOCK/4 (clock C0), the *OCTANT signal is “000” and does not match the OCTANT SELECT signal “001”*. Consequently, the COMPARE signal is logic zero.

At the second rising edge of CLOCK/4 (clock C4), the ***OCTANT signal switches to “001” and matches the OCTANT SELECT signal*** causing the COMPARE signal goes to logic one.

(Ex. E at 4:27-35.) The intrinsic record does not use the term in any other way. Defendants’ position that signals “match” even when they are not the same must therefore be rejected. *Network Commerce*, 422 F.3d at 1360 (“This is not a tenable theory in light of the specification.”); *Research Plastics, Inc. v. Fed. Packaging Corp.*, 421 F.3d 1290, 1296 (Fed. Cir. 2005) (“However, it would be illogical to describe a tube that extends to two regions in the manner that Research suggests, since this would leave the extension of the tube ill-defined.”).

Moreover, Defendants’ proposed construction does not make sense in the context of the claim and patent specification. Indeed, Defendants’ proposed construction improperly reads the word “match” out of the claim, because two signals would ***always*** match under Defendants’ construction. Notably, Defendants admit that the output signal of a “comparator circuit” indicates one of three things—“whether one of its two inputs is higher than, equal to, or lower than the other input.” (Defendants Op. Br. at 37-38.) Yet Defendants contend that in every one of those scenarios, the input signals “match.” (*Id.*) That is clearly contradicted by the intrinsic record which explains that when one input signal is lower than the other (e.g., the “Octant” signal is “000” and the “Octant Select” signal is “001”), the signals do ***not*** match:

At the first rising edge of CLOCK/4 (clock C0), the ***OCTANT signal is “000” and does not match the OCTANT SELECT signal “001”.***

(Ex. E at 4:27-29.) Defendants’ position that “matching items need not be the same” is thus contradicted by the intrinsic evidence and must be rejected. *Free Motion*, 423 F.3d at 1348. The Court should thus construe the term as proposed by Samsung.

7. “clock signal”

Samsung’s Construction	Defendants’ Construction
“A signal consisting of a series of pulses used for synchronizing the data conversion circuit.”	“A signal that conveys clocking or timing information.”

Defendants admit that “clock” is “an extremely well understood term in the art to which it pertains” (Defendants Op. Br. at 35), but then offer a construction that is different than the ordinary and customary meaning. For example, Samsung offered multiple technical dictionary definitions providing that a “clock signal” consists of a “series of pulses” used for “synchronization.” (Samsung Op. Br. at 30-31.) The specification uses the term in the same way, as discussed in Samsung’s opening brief. (*Id.*) Defendants, however, seek to purge those two basic defining characteristics from the term “clock signal,” but provide no basis for doing so.

Instead, Defendants attempt to justify changing the ordinary and customary meaning of the term “clock signal” by taking words of the asserted claim completely out of context. In that regard, Defendants assert that claim 8 requires “a clock signal for counting down.” (Defendants Op. Br. at 35.) That is clearly not what the claim requires, however, when read in context:

... *a down counter* responsive to said compare signal for initializing a count value and *responsive to a clock signal for counting down* to generate a transfer data signal having a symmetric duty cycle to enable transfer of said parallel input data to said register.

(Ex. E at 8:8-12.) Accordingly, when read without Defendants’ intentionally misleading edits, it is clear that the “down counter”—not the “clock signal”—performs the “counting down” function. The clock signal simply performs that synchronization function, as is well understood in the art. (*See, e.g.*, Ex. E at 1:14-19, 2:31-34, 3:66-4:1, 4:8-10, 4:24-5:23.) Accordingly, the term “clock signal” should be construed in accordance with its ordinary and customary meaning and use in the intrinsic record, as proposed by Samsung. *Phillips*, 415 F.3d at 1312-13.

8. “transfer data signal”

Samsung’s Construction	Defendants’ Construction
“A periodic signal requesting that external logic write the next set of parallel input data to the register.”	“A signal that conveys information regarding the transfer of data.”

As with the other disputed terms of the ’594 patent, Defendants seek to construe the term “transfer data signal” outside of the context that it is used in the claims and specification. But as set forth in Samsung’s opening brief, the specification repeatedly explains that the “transfer data signal” is a periodic signal that requests more parallel input data from the external logic at the appropriate time. (Samsung Op. Br. at 31-33.) Defendants are not entitled to a broader construction. *Phillips*, 415 F.3d at 1316 (“The importance of the specification in claim construction derives from its statutory role. The close kinship between the written description and the claims is enforced by the statutory requirement that the specification describe the claimed invention in ‘full, clear, concise, and exact terms.’”), *quoting* 35 U.S.C. § 112 ¶ 1.

Defendants argue that Samsung’s proposed construction is incorrect for three reasons. First, Defendants assert that the “transfer data signal” need not request data from *external* logic. (Defendants Op. Br. at 36.) But it is clear from the claim itself that the data is transferred from logic external to the data conversion circuit:

8. A data conversion circuit, comprising:

a register having an input coupled for receiving parallel input data and having an output; ...

a down counter responsive to said compare signal for initializing a count value and responsive to a clock signal for counting down to generate a transfer data signal having a symmetric duty cycle to enable transfer of said parallel input data to said register.

(Ex. E at 7:65-8:12.) Moreover, Defendants admit that “[t]he specification is similarly clear” in describing asserting the transfer data signal to “external logic”:

The specification is similarly clear in describing that “OCTANT SELECT signal '001 sets the proper phase delay before *asserting TRANSFER DATA to the external logic to send the next DATA IN word.*”

(Defendants Op. Br. at 36.) Defendants’ attempt to disregard the plain language of the claims and description in the specification should be rejected. *Old Town Canoe*, 448 F.3d at 1318 (“[The patented] is not entitled to a claim construction divorced from the context of the written description and prosecution history.”).

Second, Defendants assert that the “transfer data signal” need not be “periodic.” (Defendants Op. Br. at 36.) As discussed in Samsung’s opening brief, however, that is exactly how the intrinsic record describes the “transfer data signal” (*see* Samsung Op. Br. at 32):

- “The timing generation logic asserts *a periodic signal* to the external logic requesting data be presented to or removed from the data register.” (Ex. E at 1:20-22.)
- “When *the periodic signal* is asserted to the external logic, requesting that new data be read or written, the external logic begins the time-consuming process of retrieving or storing new data.” (Ex. E at 1:33-36.)

Moreover, the claim itself requires that the “transfer data signal” is periodic because it must have a “duty cycle” (Ex. E at 7:65-8:12), which is “the ratio of pulse width to the interval *between like portions of successive pulses.*” (Ex. HH, MCGRAW-HILL ELECTRONICS DICTIONARY at 167.) *See also* *O2 Micro Int’l Ltd. v. Monolithic Power Sys., Inc.*, 420 F. Supp. 2d 1070, 1083-84 (N.D. Cal. 2006), *aff’d*, 221 Fed. Appx. 996 (Fed. Cir. 2007) (“*The phrase ‘duty cycle’ means ‘in percent, 100(t0/T) where T is the period *between pulses* and t0 is the pulse width.*”).

Finally, Defendants assert that the “transfer data signal” need not “request a write command.” (Defendants Op. Br. at 36.) Again, however, Defendants disregard the explicit claim language. For example, as set forth in Samsung’s opening brief, the ’594 patent is directed to controlling the phase of a data transfer signal to set the proper timing for reading or writing to the register:

The present invention relates in general to digital timing circuits and, more particularly, *to controlling the phase of a data transfer signal* to set the proper timing *for reading or writing to a data register*.

(Ex. E at 1:7-10; *see also id.* at 6:13-15, Abstract, Title.) Asserted claim 8 clearly relates only to the embodiment of “writing to” the data register, not “reading from” the register:

... *a register* having an input coupled *for receiving parallel input data* and having an output; ...

a down counter responsive to said compare signal for initializing a count value and responsive to a clock signal for counting down to generate *a transfer data signal* having a symmetric duty cycle *to enable transfer of said parallel input data to said register*.

(Ex. E at 7:65-8:12.) Accordingly, Defendants improperly propose a construction of “transfer data signal” divorced from the context the term is used in the claims and specification, which should be rejected. *Old Town Canoe*, 448 F.3d at 1318 (“[The patentee] is not entitled to a claim construction divorced from the context of the written description and prosecution history.”).

IV. U.S. PATENT NO. 6,362,644

A. **Defendants’ Proposed Constructions Improperly Disregard The Entire Context Of The ’644 Patent**

“[A]s explained in *Phillips*, [the patentee] is not entitled to a claim construction divorced from the context of the written description and prosecution history.” *Nystrom*, 424 F.3d at 1144-45. Defendants repeatedly disregard that basic tenet of claim construction, however, in an attempt to manufacture infringement claims over technologies entirely unrelated to the ’644 patent. Indeed, there is no genuine dispute that the ’644 patent relates to “programmable termination” as evidenced by the title of the patent. And Defendants admit “[t]o terminate a transmission line is to dissipate or absorb unwanted energy on the transmission line so as to prevent reflection by absorbing undesirable signals.” (Defendants’ Br. at 17.) Yet each of Defendants’ proposed constructions are designed to purge the concepts of programmability and termination from the claims. Those proposed constructions must therefore be rejected. *Network*,

242 F.3d at 1352 (“The claims are directed to the invention that is described in the specification; they do not have meaning removed from the context from which they arose.”).

B. Proper Construction Of The Disputed Terms Of The '644 Patent

1. “termination signal” (claim 6) and “programmable termination” (claim 12)

Claim Term	Samsung’s Construction	Defendants’ Construction ⁹
“termination signal”	“A signal that configures the circuit to receive data signals from one of several available logic families.”	“A signal that dissipates or absorbs energy <u>from a transmission line or other device.</u> ”
“programmable termination”	“The capability to configure the circuit to receive data signals from one of several available logic families.”	“An electrical circuit that can be configured to provide various levels or degrees for the dissipation or absorption of electrical energy <u>from a transmission line or other device.</u> ”

a. “termination signal”

The parties dispute whether or not the claimed “termination signal” configures the circuit to receive data signals from one of several available logic families, as described by the intrinsic evidence. (*See* Samung Op. Br. at 35-37.) As an initial matter, Defendants’ proposed construction is illogical because “signals” do not absorb energy. Indeed, Defendants themselves recognize that load elements—not signals—dissipate the unwanted signals:

To eliminate the reflection of unwanted signals, a transmission line, such as a wire or conductive path in a memory circuit, is often terminated by providing **a load element** (sometimes called just a ‘load’) connected to a power supply that then **dissipates the unwanted signal**.

(Defendants Op. Br. at 16.) Defendants’ construction must therefore be rejected for that reason alone. *See, e.g., Interactive Gift*, 256 F.3d at 1336; *Research Plastics*, 421 F.3d at 1296.

Defendants’ construction must also be rejected because it eliminates the key

⁹ Additional language added by Defendants on the night before this brief was due is shown underlined. (*See* Ex. FF.) The new language does not, however, address the disputes at issue.

configuration feature from the claims. Indeed, the specification explicitly states that the claimed “termination signal” is a *configuration* signal. (Ex. G at 4:46-49 (referring to “the *(configuration) termination signals*.”).) That definition cannot be disregarded. *See, e.g., Abbott Labs. v. Andrx Pharms., Inc.*, 452 F.3d 1331, 1344-45 (Fed. Cir. 2006); *Tate Access Floors, Inc. v. Maxcess Techs., Inc.*, 222 F.3d 958, 968 (Fed. Cir. 2000). And as discussed in Samsung’s opening brief, the entire patent relates to configuring a circuit to receive data signals from one of several available logic families. (Samsung Op. Br. at 33-37.) The specification provides no other function for the termination signal, and Defendants’ attempt to eliminate that concept from the claims is improper. *See Nystrom*, 424 F.3d at 1144-45; *Old Town Canoe*, 448 F.3d at 1318.

Defendants’ only basis for disagreeing with Samsung’s proposed construction is their assertion that “Samsung improperly attempts to import limitations from the dependent claims (e.g., dependent claims 10 and 11) or the specification both of which are improper.” (Defendants Op. Br. at 19.) Defendants’ argument is misplaced, however, considering that neither of those dependent claims further limit the “termination signal.” Moreover, interpreting the claims in view of the specification, as Samsung proposes, is not the same as reading in claim limitations. *See, e.g., Chamberlain Group, Inc. v. Lear Corp.*, 516 F.3d 1331, 1335 (Fed. Cir. 2008) (“Although it is unacceptable to import limitations into a claim from the written description, ‘the specification is always highly relevant to the claim construction analysis. Usually, it is dispositive.’”), *quoting Phillips*, 415 F.3d at 1315. Defendants’ proposed construction—which is divorced from the intrinsic record—must therefore be rejected. *Nystrom*, 424 F.3d at 1144-45.

b. “programmable termination”

Defendants’ proposed construction of the phrase “programmable termination” is flawed for the same reasons. Notably, Defendants admit that the patent is directed to configuring a circuit to receive data signals from one of several available logic families:

The specification clarifies that the inventors contemplated that a “programmable termination” could be configured so as to meet the needs of different types of circuitry, such as from different logic families.

(Defendants Op. Br. at 25.) Despite that, Defendants attempt to divorce the claims from the description in the specification by arguing that “nothing in the specification or the claims limits programmability to the selection of a logic family.” (*Id.*) Yet nothing in the patent suggests in any way that “programmability” relates to anything else. Defendants’ attempt to broaden the scope of their patent must therefore be rejected. *See, e.g., Netword*, 242 F.3d at 1352 (“Although the specification need not present every embodiment or permutation of the invention and the claims are not limited to the preferred embodiment of the invention, neither do the claims enlarge what is patented beyond what the inventor has described as the invention.”) (citation omitted).

And as with the term “termination signal” addressed above, Defendants again incorrectly assert that “Samsung’s proposed construction attempts to read in limitations from the dependent claims (*see, e.g.,* claim 14) or the specification that address logic families.” (Defendants Op. Br. at 25.) Again, however, the dependent claim does not further limit the disputed term “programmable termination” and Samsung has read nothing into the claim.¹⁰ Instead, Samsung’s construction (unlike Defendants’ proposed construction) is based upon reading the claims in view of the intrinsic record, which is required. *See Phillips*, 415 F.3d at 1316 (“The construction that stays true to the claim language and most naturally aligns with the patent’s description of the invention will be, in the end, the correct construction.”) (citation omitted).

¹⁰ Specifically, claim 13 is directed to two input signals that function together as a differential signal from one logic family, and claim 14 is directed to two input signals that function as independent signals from two different logic families. Either way, the specification makes clear that the circuit may be configured to receive each of those signals from one of several available logic families, consistent with Samsung’s proposed construction. (Ex. G at 2:23-44, 3:2-35.)

2. **“third and fourth pins for respectively receiving first and second termination signals” (claim 6) and “first and second load elements are coupled to third and fourth pins of the semiconductor package to provide a programmable termination” (claim 12)**

Claim Term	Samsung's Construction	Defendants' Construction
“third and fourth pins for respectively receiving first and second termination signals”	“Third and fourth pins that receive different termination signals (e.g., not power supply or ground pins) dependent upon the selected one of several available logic families.”	The Court need not construe this, however, if the Court is inclined to construe this, ON Semiconductor contends that the phrase can be understood with the following constructions: “pins”; and “termination signals.”
“first and second load elements are coupled to third and fourth pins of the semiconductor package to provide a programmable termination”	“The first and second load elements are connected to the third and fourth pins that receive different signals to configure the circuit to receive data signals from one of several available logic families.”	The Court need not construe this, however, if the Court is inclined to construe this, ON Semiconductor contends that the phrase can be understood with the following constructions: “load elements”; “coupled”; “pins”; “semiconductor package”; “programmable termination.”

In an effort to circumvent the explicit statements made during prosecution concerning the scope of the invention in order to obtain allowance of the asserted claims, Defendants ask the Court not to construe these disputed phrases. Defendants' opposition brief, however, makes clear that there is an actual dispute requiring construction. *See, e.g., O2 Micro*, 2008 WL 878924 at *7 (“When the parties raise an actual dispute regarding the proper scope of these claims, the court, not the jury, must resolve that dispute.”). In particular, the parties dispute whether the claimed “third and fourth pins” are pins that receive different termination signals (*e.g.*, not power supply or ground pins) dependent upon the selected one of several available logic families.

For example, Defendants dispute Samsung's proposed constructions containing “negative limitations about power supply or ground pins.” (Defendants Op. Br. at 23.) But the inventors expressly differentiated the invention on that very basis during prosecution:

- “The Gabara controllable impedance element is *coupled from interface 103 to internal nodes providing a power supply voltage V_R , V_P or V_{SS} , not to a third or*

fourth pin to receive a first or second termination signal.” (Ex. H at H-75; *see also id.* at H-77-78.)

- “The Kubista termination resistors are *coupled from lines 16 or 18 to either power supply V_{CC} or ground potential, not to third or fourth pins to receive first or second termination signals.*” (Ex. H at H-75-76; *see also id.* at H-78.)
- “The Decuir termination resistor is *coupled either across the transmission line or to an existing power supply node such as V_{CC} or ground potential, not to a third or fourth pin that receives a termination signal.*” (Ex. H at H-76; *see also id.* at H-79.)

The third and fourth pins cannot, therefore, be power supply or ground pins. *Ekchian v. Home Depot, Inc.*, 104 F.3d 1299, 1304 (Fed. Cir. 1997) (“[S]ince, by distinguishing the claimed invention over the prior art, an applicant is indicating what the claims do not cover, he is by implication surrendering such protection.”).

Defendants also argue that the disputed terms cannot be construed to “relate to logic families.” (Defendants Op. Br. at 23-24.) Again, however, the inventors repeatedly told the patent office and the public that the capability to “terminate signals of a variety of logic families” was the key feature that distinguished the claimed invention from the prior art:

- “Consequently, *the Gabara integrated circuit is suitable for terminating signals from a specified logic family, whereas the invention as claimed can terminate signals of a variety of logic families* because its load elements are coupled to third and fourth pins of a semiconductor package in order to receive first and second termination signals.” (Ex. H at H-75; *see also id.* at H-77-78.)
- “Consequently, *the Kubista termination network is suitable for terminating differential signals but does not have the flexibility of the claimed invention in terminating signals from a variety of logic families*, depending on the value of the first and second termination signals.” (Ex. H at H-76; *see also id.* at H-78.)
- “Since the Decuir termination network does not have a load element coupled to a termination signal, *the termination network cannot be used to terminate signals from a different logic family by modifying a termination signal, as can the present invention.*” (Ex. H at H-76; *see also id.* at H-79.)

Having repeatedly argued that their claimed invention was different from the prior art on that basis, Defendants are not entitled to “a mulligan that would erase from the prosecution history

the inventor's disavowal" of claim scope. *Hockerson-Halberstadt, Inc. v. Avia Group Int'l, Inc.*, 222 F.3d 951, 957 (Fed. Cir. 2000). Accordingly, Samsung's proposed constructions should be adopted. *Cultor Corp. v. A.E. Staley Mfg. Co.*, 224 F.3d 1328, 1331 (Fed. Cir. 2000) (finding that a claim cannot be "correctly construed to cover what was expressly disclaimed").

3. "pin"

Samsung's Construction	Defendants' Construction
"A small diameter metal rod used as an electrical terminal external to the semiconductor package housing."	"A conductor configured to make an electrical connection."

The parties' proposed constructions of the term "pin" differ in two primary ways. First, Samsung's proposed construction provides that the claimed "pins" are "external to the semiconductor package housing," whereas Defendants' proposed construction encompasses both internal and external structures. The intrinsic record does not support Defendants' construction. For example, as explained in Samsung's opening brief, the patent specification repeatedly emphasizes that the pins must be external. (Samsung Op. Br. at 42-44.) Indeed, Defendants acknowledge that the pins are external, but then attempt to encompass other structures within their proposed construction. (Defendants Op. Br. at 21 ("In semiconductor devices, *connections to the outside world are made through pins*."). The term should thus be construed accordingly to the intrinsic record. *Netword*, 242 F.3d at 1352 ("Although the specification need not present every embodiment or permutation of the invention and the claims are not limited to the preferred embodiment of the invention, neither do the claims enlarge what is patented beyond what the inventor has described as the invention.") (citation omitted).

Second, the parties dispute whether or not the claimed "pins" are "small diameter metal rod[s]." In that regard, Defendants ask the Court to disregard the ordinary and customary meaning as set forth in Samsung's opening brief (Samsung Op. Br. at 42) based upon Fig. 5 of

the patent. (Defendants Op. Br. at 22.) That figure does not, however, illustrate “pins” as “rectangular connection rather than metal rods” as Defendants contend. The figure is simply a two dimensional block diagram that shows nothing about the actual three dimensional shape or composition of the pins. The intrinsic record does not, therefore, support a construction broader than the ordinary and customary meaning as proposed by Samsung.

Defendants’ reliance upon extrinsic evidence to try and expand the scope of the term “pin” beyond the ordinary meaning as used in the intrinsic record is likewise improper. *See, e.g., Free Motion*, 423 F.3d at 1348 (“The court must ensure that any reliance on dictionaries accords with the intrinsic evidence: the claims themselves, the specification, and the prosecution history.”); *Nystrom*, 424 F.3d at 1145 (“[I]t is improper to read the term to encompass a broader definition simply because it may be found in a dictionary, treatise, or other extrinsic source.”). Moreover, none of the extrinsic evidence cited by Defendants states that the term “pin” encompasses any “conductor configured to make an electrical connection.” That evidence does not, therefore, support Defendants’ proposed construction.¹¹ *Phillips*, 415 F.3d at 1319 (“In sum, extrinsic evidence may be useful to the court, but it is unlikely to result in a reliable interpretation of patent claim scope unless considered in the context of the intrinsic evidence.”).

Finally, Defendants’ assertion that a “pin” is any “conductor configured to make an electrical connection,” such as a pin, metal pad, conductive tab, or metallized ball, is clearly incorrect in view of the intrinsic record. As discussed in Samsung’s opening brief, the

¹¹ The extrinsic documents cited by Defendants should also be disregarded as irrelevant because they were generated years after the patent application was filed. *See, e.g., Kopykake Enters., Inc. v. Lucks Co.*, 264 F.3d 1377, 1383 (Fed. Cir. 2001) (“[W]hen a claim term understood to have a narrow meaning when the application is filed later acquires a broader definition, the literal scope of the term is limited to what it was understood to mean at the time of filing.”).

specification expressly differentiates the claimed “pins” from contacts that are not rod shaped such as the internal “bump type technology” or “ball grid array (BGA) technology” used to connect those pins to the bond pads 102, 112, 114, 116, 118, 120, 122, and 124 of Fig. 5. (Ex. G at 4:25-31.) Defendants’ proposed construction—which encompasses that “bump type technology” or “ball grid array (BGA) technology” differentiated by the specification—is thus inconsistent with the intrinsic record and must be rejected. *See, e.g., Bell Atl. Network Servs., Inc. v. Covad Commc’ns Group, Inc.*, 262 F.3d 1258, 1270-73 (Fed. Cir. 2001) (rejecting patentee’s attempt to construe “mode” to cover various “rates,” where the specification distinguished the two). Accordingly, the Court should adopt Samsung’s proposed construction.

4. “coupled”

Samsung’s Construction	Defendants’ Construction
“Directly connected.” ¹²	“Linked together.”

Defendants’ contention that the term “coupled” as used in the ’644 patent encompasses anything that is “linked together,” *e.g.*, both direct and indirect connections, is clearly incorrect in view of the intrinsic record. The patent relates to programmable termination in logic circuits, and *every* circuit element in a circuit is “linked together.” For example, load elements 108 and 110 in Fig. 5 are linked to every pin directly or indirectly through various circuit elements.¹³

¹² In view of Defendants’ argument in their opening brief, it is clear that there is a dispute concerning the scope of this term. It should therefore be construed. *O2 Micro*, 2008 WL 878924 at *9 (“When the parties present a fundamental dispute regarding the scope of a claim term, it is the court’s duty to resolve it.”).

¹³ For example, load element 108 is directly connected to pins 99 and 117, and indirectly connected to pins 94, 97, 119, 121, 125, and 126. Similarly, load element 110 is directly connected to pins 97 and 119, and indirectly connected to pins 94, 99, 117, 121, 125, and 126.

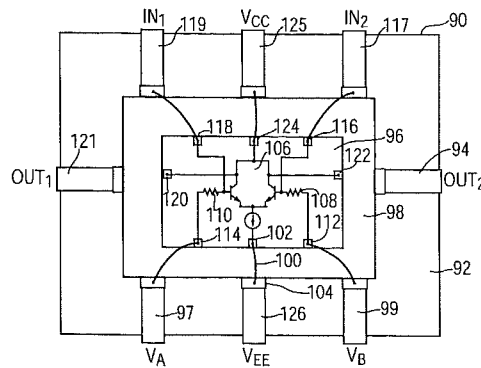


FIG. 5

Defendants thus try to erase the very circuit connections required by the claims, which is improper. *See, e.g., Ethicon*, 93 F.3d at 1578 (“If, as [the patentee] argues, ‘connected to’ should be read broadly to include elements which are connected directly or indirectly, then this language would read on a lockout mechanism located anywhere in the surgical stapler, and the ‘connected to’ limitation would be meaninglessly empty.”); *Forest Labs.*, 239 F.3d at 1313.

The *only* thing Defendants rely upon to expand the construction of “coupled” beyond its use in the intrinsic record is clearly inapplicable extrinsic evidence. For example, Defendants rely upon a dictionary definition of “coupling” that relates to an interconnection between different *circuits*. (Defendants Op. Br. at 24 (“For example, the Modern Dictionary of Electronics defines ‘coupling’ as ‘[a] mutual relation *between two circuits* that permits energy transfer from one to the other.’”).) The patent, however, uses the term “coupled” to define the interconnection between *circuit components*, *i.e.*, the components of a single circuit. (See *Samsung Op. Br.* at 44-46.) Accordingly, Defendants’ proposed construction is inapplicable to the context of the patent wherein “coupling” is used to describe the connections between the elements of a single circuit. Defendants’ proposed construction must therefore be rejected. *See, e.g., Old Town Canoe*, 448 F.3d at 1318; *Network Commerce*, 422 F.3d at 1360. The Court should thus adopt Samsung’s construction, which is consistent with the intrinsic evidence.

5. “terminate” (claim 6) and “loading” (claim 12)

Claim Term	Samsung’s Construction	Defendants’ Construction
“terminate”	“The use of a load at the end of a transmission line or other device whose impedance is matched to that of the line.”	“To dissipate or absorb energy <u>from a transmission line or other device.</u> ” ¹⁴
“loading”	“Placing an impedance at the end of a transmission line or other device to match that of the line.”	“Applying effects that dissipate electrical energy.”

a. “terminate”

As explained in Samsung’s opening brief, the ordinary and customary meaning of “terminate” is “the use of a load at the end of a transmission line or other device whose impedance is matched to that of the line.” (Samsung Op. Br. at 46.) Indeed, Defendants’ own description of the technology states the same thing:

- “To *terminate* a transmission line *is to dissipate or absorb unwanted energy on the transmission line so as to prevent reflection by absorbing undesirable signals.*” (Defendants Op. Br. at 17.)
- “*To eliminate the reflection of unwanted signals, a transmission line*, such as a wire or conductive path in a memory circuit, *is often terminated by providing a load element (sometimes called just a ‘load’) connected to a power supply that then dissipates the unwanted signal.*” (Defendants Op. Br. at 16.)

Despite Defendants’ apparent agreement with the ordinary and customary meaning of “terminate,” Defendants propose a construction entirely divorced from that meaning and the use of the term in the specification. Indeed, energy is “dissipate[d] or absorb[ed]” in nearly every portion of a circuit, the vast majority of which has nothing to do with termination. Defendants’ proposed construction is thus clearly overbroad and must be rejected. *Nystrom*, 424 F.3d at 1144-45 (“However, as explained in *Phillips*, [the patentee] is not entitled to a claim construction divorced from the context of the written description and prosecution history.”).

¹⁴ Additional language added by Defendants on the night before this brief was due is shown underlined. (See Ex. FF.) The new language does not, however, address the disputes at issue.

Additionally, Defendants' attempt to discard the ordinary and customary meaning by alleging that it requires an "idealized value" should be rejected—Samsung's construction does not require an "idealized value" so that the termination is perfect.¹⁵ In any event, nothing permits disregarding the intrinsic record and the ordinary meaning of the term "terminate," as advocated by Defendants. *Primos*, 451 F.3d at 847-48 ("[W]e ordinarily construe claim terms to have their customary meaning as understood by a person of ordinary skill in the art. In ascertaining the ordinary and customary meaning of a claim term, a court's primary focus should be on the intrinsic evidence of record, viz., the claims, the specification, and, if in evidence, the prosecution history.") (citation omitted). The Court should thus adopt Samsung's construction.

b. "loading"

As with the term "terminate," Defendants propose construing the term "loading" completely out of context and divorced from the concept of termination. But claim 12 expressly requires "**loading** the first and second logic signals with first and second load elements ... **to provide a programmable termination....**" (Ex. G at 6:34-38.) In the context of the claims, therefore, "loading" is not simply generically "applying effects that dissipate electrical energy," as advocated by Defendants, but rather, must be construed in accordance with its claimed function of providing a programmable termination. Defendants' proposed construction must therefore be rejected. *Phillips*, 415 F.3d at 1314 ("To begin with, the context in which a term is used in the asserted claim can be highly instructive."). Accordingly, the Court should adopt Samsung's proposed construction, which is consistent with the intrinsic record.

¹⁵ To address Defendants concern, Samsung believes that the following alternative construction is equally applicable: "the use of a load at the end of a transmission line or other device whose impedance approximates that of the line."

6. “load element”

Samsung’s Construction	Defendants’ Construction
“An impedance that provides a termination for a logic device transmission line to help reduce interconnect signal distortion.”	“Electrical devices capable of dissipating electrical energy.”

As with the above terms “terminate” and “loading,” Defendants’ proposed construction improperly takes the phrase “load element” out of the context of the intrinsic record so that it is entirely divorced from the concept of termination. For example, as discussed in Samsung’s opening brief, the claims themselves require that the load elements function to terminate the transmission line. (Samsung Op. Br. at 48.) Indeed, the specification explicitly defines the load elements as “termination” elements. (Ex. G at 4:46-49 (referring to “the *termination (load) elements*”).) That definition cannot be disregarded as advocated by Defendants. *See, e.g., Abbott Labs.*, 452 F.3d at 1344-45; *Tate Access*, 222 F.3d at 968.

Notably, although Defendants assert that “load elements” need not function “to help reduce interconnect signal distortion” (Defendants Op. Br. at 20-21), just a few pages earlier in their own brief Defendants admit that that is the exact function of such load elements:

To eliminate the reflection of unwanted signals, a transmission line, such as a wire or conductive path in a memory circuit, is often terminated by providing a load element (sometimes called just a ‘load’) connected to a power supply that then dissipates the unwanted signal.

(Defendants Op. Br. at 16.) Indeed, the specification identifies no other purpose for such load elements. Defendants’ attempt to broaden that term beyond what is claimed and defined in the specification must be rejected. *See Netword*, 242 F.3d at 1352 (“The claims are directed to the invention that is described in the specification; they do not have meaning removed from the

context from which they arose.”). The Court should thus adopt Samsung’s construction.¹⁶

V. U.S. PATENT NO. 5,252,177

As shown at page 47 of Defendants’ brief with respect to claim 8, there is hardly a term or a phrase in the ’177 patent claims that Defendants do not contend this Court must construe. And this is after Defendants dropped 6 of the 14 terms that they originally proposed for construction in just two of the claims in this Samsung patent. Defendants’ constructions seek to read in limitations and embodiments in an effort to change unambiguous claim language into non-infringement arguments. In truth, however, there are very few terms or phrases in the ’177 patent that require construction, and Defendants’ contrary contentions, and unduly narrow constructions, should be rejected.

A. **Defendants’ Comparison Of The Claimed Method To Drilling A Well Covered With Plywood and Burning The Plywood Is Not Helpful**

Analogies are often helpful in explaining technical subject matter. Defendants’ analogies are not. Rather than explaining technically difficult subject matter, Defendants’ analogies are directed to making their improper claim constructions seem plausible. Thus, while it may be helpful at some (high) level to analogize etching a contact hole to drilling a well (both remove material to form a hole), it is not helpful to analogize photoresist to plywood, nor analogize plasma ashing to burning plywood. Photoresist is not like plywood for many different reasons. Moreover, there are many types of photoresist, and the ’177 patent does not limit itself to any particular photoresist. Similarly, contrary to the implication of Defendants’ analogy, plasma ashing does not “burn” anything, notwithstanding the use of “ash” in its name. This simplistic analogy is consistent with the arguments Defendants make in defining the term, but misleading.

¹⁶ Defendants’ objection to the phrase “logic device” in Samsung’s construction is unclear, since the entire patent relates to terminations for *logic circuits*. (Ex. G at Abstract, 1:5-6.)

Further, Defendants unhelpfully characterize the invention as taking “advantage of the serendipitous presence of the oxide layer formed by the ashing process.” (Defendants Op. Br. at 49.) In fact, the oxide layer created as part of the invention is sufficient to protect the underlying metal layer from damage, which solved a problem in the field. (*See* Ex. I at 1:44-50, 2:61-3:8, 3:14-22.) To be sure, the prior art, including that considered by the Patent Office, recognized that oxide layers could be formed on certain metal layers, but viewed the oxides as a negative. (*See, e.g.*, Defendants Op. Br. at 54; *see also* Defendants Op. Br. Ex. 40 at 5:9-15.) The ’177 patent applicants, however, were the first to recognize that this perceived negative (an oxide layer formed over a metal) could, under appropriate conditions, be turned to an advantage if used as claimed in the patent. (*See* Ex. I at 3:2-8, 3:14-22.) That is not serendipity—it is, as recognized by the Patent Office, a patentable invention. (*See* Ex. J at J-54-55, J-71-73.)

B. Proper Construction Of The Disputed Terms Of The ’177 Patent

1. “photoresist pattern”

Samsung’s Construction	Defendants’ Construction
The meaning of this phrase requires no construction. To the extent a construction is necessary, the phrase should be construed as “a layer of photoresist material that selectively exposes an underlying layer.”	“A light sensitive organic material formed into a predetermined pattern and that can be removed in oxygen plasma.”

The proper construction of this term, should any be necessary, is set forth in Samsung’s brief at 52. The ’177 patent uses the term “photoresist” in its ordinary sense in the field without defining it. As a result, there is no basis to unduly limit the breadth of the term as it is understood by those skilled in the art. *Verizon*, 503 F.3d at 1304 (“Since the specification does not define the term ‘server,’ we look to its ordinary meaning to a person of ordinary skill in the art. Vonage’s proposed definition restricts the term ‘server’ beyond this ordinary meaning.”).

Defendants improperly seek to limit the meaning of “photoresist” in the ’177 patent claims as limited to only those that are organic and can be removed in oxygen plasma. (*See*

Defendants Op. Br. at 58-59.) To do this, Defendants improperly find a narrowed definition of “photoresist” in the ’177 patent specification, relying on the description that the photoresist can be removed by plasma ashing. (*See id.*) Then, Defendants argue for their restrictive construction of “photoresist” based on their improperly narrowed definition of “plasma ashing.” (*See id.* at 52, 58-59.) Defendants’ arguments run counter to *Phillips* and the relevant evidence, and accordingly should be rejected. *See Phillips*, 415 F.3d at 1312-13.

2. “exposed top surface” and “expose a top surface of said first conductive layer”

Claim Term	Samsung’s Construction	Defendants’ Construction
“exposed top surface”	The meaning of this phrase requires no construction. To the extent a construction is necessary, the phrase should be construed as “the exposed top surface of a layer of electrically conductive material.”	“The uppermost surface of the unoxidized conductive layer is uncovered by the etching step.”
“expose a top surface of said first conductive layer”	The meaning of this phrase requires no construction. To the extent a construction is necessary, the phrase should be construed as “exposing a top surface of a layer of electrically conductive material.”	“The uppermost surface of the unoxidized conductive layer is uncovered by the etching step.”

The proper construction of these phrases, should any be necessary, is set forth in Samsung’s brief at 53. There is no genuine reason to construe these unambiguous phrases. The only “dispute” is whether to read into the claims, as Defendants propose, the material choices for the top layer and how the top layer is uncovered. There is no basis to read limitations into the claims as Defendants propose. Defendants argue that there is an “ambiguity” in the phrases that “arises as a result of the naturally occurring oxide layer that forms on the surface of many materials and, in particular, aluminum.” (Defendants Op. Br. at 59.) Tellingly, Defendants point to no intrinsic evidence that supports the “ambiguity” that underlies its claim construction—there is no mention of the “naturally occurring oxide layer” in the ’177 patent. (*See id.*) Rather, this “ambiguity” arises solely from Defendants’ litigation positions in this lawsuit. (*See Defendants*

Op. Br. at 60.) In fact, there is no “ambiguity” and Defendants’ attempt to introduce one to construe the claims around its litigation positions should be rejected.

3. **“removing said photoresist pattern positioned on said insulation layer by plasma etching simultaneously forming a protective oxide layer” (claim 1) and “removing remaining photoresist positioned on said insulation layer by plasma ashing to simultaneously form a protective oxide layer on said exposed top surface of said first conductive layer” (claim 8)**

Claim Term	Samsung’s Construction	Defendants’ Construction ¹⁷
“ <u>removing said photoresist pattern</u> positioned on said insulation layer by plasma etching simultaneously forming a protective oxide layer”	The meaning of this phrase requires no construction. To the extent a construction is necessary, the phrase should be construed as “removing photoresist on the insulating layer through plasma ashing / etching while also forming a protective oxide layer on the exposed top surface of the first conductive layer.”	“Getting rid of all the photoresist on the insulation layer by plasma etching and forming a protective oxide layer at the same time as removing the photoresist.”
“ <u>removing remaining photoresist</u> positioned on said insulation layer by plasma ashing to simultaneously form a protective oxide layer on said exposed top surface of said first conductive layer”	The meaning of this phrase requires no construction. To the extent a construction is necessary, the phrase should be construed as “removing photoresist on the insulating layer through plasma ashing / etching while also forming a protective oxide layer on the exposed top surface of the first conductive layer.”	“Getting rid of all the remaining photoresist by plasma ashing and forming a protective oxide layer at the same time as removing the photoresist.”

The proper construction of these phrases, should any be necessary, is set forth in Samsung’s brief at 54. Defendants attempt to read into claim 1 that all of the photoresist is removed by etching—i.e., “getting rid of all of....” (See Defendants Op. Br. at 49) The claim

¹⁷ Defendants modified their constructions of the terms “removing said photoresist pattern” and “removing remaining photoresist” to “getting rid of the photoresist pattern” and “getting rid of the remaining photoresist,” respectively. (See Ex. FF.) It is not clear, however, whether Defendants maintain their position that the terms require “getting rid of *all* the photoresist....” To the extent Defendants maintain that position, the Court should resolve the dispute. *O2 Micro*, 2008 WL 878924 at *9 (“When the parties present a fundamental dispute regarding the scope of a claim term, it is the court’s duty to resolve it.”).

makes no such requirement and the specification does not either. Rather, it just says “removing.” (See Ex. I at 3:59-4:2, 4:34-37.) While in a preferred embodiment the etch (or more specifically the ashing) removes the photoresist pattern (see Ex. I at 2:61-63), claim 1 does not require that all of it be removed. (see Ex. I at 3:59-4:2.) Accordingly, Defendants’ proposed construction is contrary to the language of the claim and specification.

Claim 8 requires that the plasma ashing “remove the remaining photoresist.” (See Ex. I at 4:34-37.) No further construction is necessary. The claim language refers to the ashing step that is intended to remove the photoresist. The patent, however, qualifies that some small amount of photoresist or residue may remain even after the photoresist pattern is ashed, and thus employs subsequent cleaning steps. (See Ex. I at 3:2-7 (“The aluminum oxide layer 35, an insulation layer, prevents reaction between the wiring, an organic solvent and water in *subsequent processing to remove the photoresist...*”).) Defendants’ proposed construction—“getting rid of all of ...”—would apparently not permit the subsequent cleaning steps taught in the patent and that are consistent with ashing processes. Such perfection in removal of the photoresist is not technically or lawfully required for the reasons set forth in Samsung’s opening brief at 55. Accordingly, Defendants’ constructions should be rejected.

4. “plasma etching” and “plasma ashing”

Claim Term	Samsung’s Construction	Defendants’ Construction
“plasma etching”	The meaning of this phrase requires no construction. To the extent a construction is necessary, the phrase should be construed as “a process of removing one or more materials using plasma.”	This claim is invalid for failure to comply with the requirements of 35 U.S.C. § 112. To the extent the Court construes this term, ON Semiconductor contends that the phrase can be understood with the following construction: plasma etching: “An etching process for forming a contact hole using a plasma of ionized gases in which the ions are accelerated toward the material desired to be removed.”

“plasma ashing”	The meaning of this phrase requires no construction. To the extent a construction is necessary, the phrase should be construed as “a plasma etch designed to remove photoresist.”	This claim is invalid for failure to comply with the requirements of 35 U.S.C. § 112. To the extent the Court construes this term, ON Semiconductor contends that the phrase can be understood with the following construction: plasma ashing: “A process for removing an organic material, such as a photoresist in a plasma of oxygen.”
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The proper construction of these terms, should any be necessary, is set forth in Samsung’s brief at 55. Defendants attempt to read special meanings—different than their ordinary meanings—into these terms based on the inventor’s alleged use of them (Defendants Op. Br. at 50-51), but the specification rejects Defendants’ position. In fact, the specification uses the terms plasma etch and plasma ashing in their ordinary meanings. (*See* Ex. I at 1:31-33 (plasma etching), 2:61-63 (plasma ashing).)

Defendants agree that an “etch” is “the selective removal of unwanted materials from a surface.” (Defendants Op. Br. at 51.) One type of etch is a “plasma etch” which removes unwanted material using plasma—an ionized gas. (*See, e.g.,* Ex. N, MODERN DICTIONARY OF ELECTRONICS at 754 (plasma etching: “An etching process using a cloud of ionized gas as the etchant.”).) That is the plain meaning of “plasma etch,” as set forth in Samsung’s opening brief. (*See* Samsung Op. Br. at 56.) That is precisely the context in which the ’177 patent uses the term in every instance. (*See, e.g.,* Ex. I at 3:59-60.) A plasma etch can be used to remove a photoresist, and can be used to remove materials to create contact holes and vias—it can be used to etch any structure as long the plasma chemistry is adjusted to remove the material of interest. (*See, e.g.,* Ex. Y, Burba et al., *Selective Dry Etching of Tungsten for VLSI Metallization*, 133 J. OF THE ELECTROCHEMICAL SOC’Y at 2113 (describing the plasma etching of Tungsten).)

One type of plasma etch is plasma ashing. In plasma ashing, the material to be removed is photoresist. (*See* Samsung Op. Br. at 56-57; *see also* Ex. U at 1:5-8, 2:20-21.) The photoresist

is removed by the plasma. (*See id.*) The most common form of plasma used for ashing is oxygen. As Defendants' own extrinsic evidence recognizes, however, there are other plasmas that can be used for ashing. (*See* Defendants Op. Br. Ex. 46 at 4 (“[T]his ashing can be carried out with oxygen gas O₂ or by means of ozone O₃.”).) Moreover, the photoresist is not “burned off” as Defendants assert (without support). Rather, in a typical ashing environment the oxygen plasma bombards the carbon-based photoresist and the carbon and oxygen combine to form carbon oxide gases (like carbon dioxide). (*See, e.g.*, Ex. U at 2:28-32 (“The oxygen radicals are thus caused to react with the remaining portion of the resist film 2 on the substrate 1, thereby decomposing and evaporating it into CO₂, NO₂, and H₂O....”).) The '177 patent uses the term “plasma ashing” in its ordinary meaning. (*See* Ex. I at 2:61-62.) Indeed, otherwise it would be unnecessary for the '177 patent to disclose that the preferred embodiment for the ashing step uses oxygen plasma. (*See id.*) *See also Verizon*, 503 F.3d at 1304 (“The fact that such functions are mentioned separately when a ‘server’ is mentioned in the claims weighs against limiting a ‘server’ to one that performs the functions. *See Phillips*, 415 F.3d at 1314 (“[T]he claim in this case refers to ‘steel baffles,’ which strongly implies that the term ‘baffles’ does not inherently mean objects made of steel.’”).).

Defendants argue that plasma etching and plasma ashing “are distinct processes used for different purposes, and are not interchangeable.” (Defendants Op. Br. at 51.) That position is inconsistent with the both the intrinsic and extrinsic evidence. As shown by the extrinsic evidence and used by the intrinsic evidence, “plasma ashing” is a particular type of “plasma etch”—a generic term. (*See* Samsung Op. Br. at 56; *see also* Ex. U at 1:5-8, 2:20-21; Ex. I at 2:61-63.) It is in this context that the specification and claims recognize photoresist is removed by the generic plasma etch or the specific plasma ashing. (*See* Ex. I at 2:61-63, 3:59-4:2, 34-37.) The same relationship is reflected in the prosecution history. (*See* Ex. J at J-75-78.)

Defendants' attempt to depart from the ordinary meanings in favor of meanings unique to the '177 patent is the basis for Defendants' related argument that the terms are not supported in the specification as required by 35 U.S.C. § 112. In other words, Defendants argue the terms have special meanings, and then argue that the terms lack support in the specification. (*See* Defendants Op. Br. at 50-52; *see also* Final Joint Claim Construction Charts Ex. F at 33-34, 37 (D.I. 90).) There is no dispute that if the ordinary meanings are accepted, as set forth in the Samsung's brief, the terms are fully supported as the Patent Office understood them to be in issuing the patents. Defendants' positions based in litigation positions, not intrinsic evidence, should be rejected.

5. “simultaneously form[ing] a protective oxide layer” and “simultaneously form[ing]”

Claim Term	Samsung's Construction	Defendants' Construction
“simultaneously form[ing] a protective oxide layer”	“During the process of removing photoresist through plasma ashing / etching, creating an oxide layer sufficient to protect the underlying first conductive layer.”	“Forming at the same time.”
“simultaneously form[ing]”	“Forming as part of the plasma ashing / etching also used to remove photoresist.”	“Form at the same time.”

The proper construction of these terms, should any be necessary, is set forth in Samsung's brief at 57. To be clear, Samsung does not contend that the terms “simultaneously form” and “simultaneously forming” need to be construed, but rather that the larger phrases “simultaneously form[ing] a protective oxide layer” require construction, as set forth in Samsung's brief. (*See id.*) Defendants do not address the larger phrase identified by Samsung in the proposed terms and construed in the Joint Claim Construction submission. (*See* Defendants Op. Br. at 52-53; *see also* Final Joint Claim Construction Charts Ex. F at 34-35, 40 (D.I. 90).)

Defendants argue that the “[t]he problem with Samsung’s construction is that it attempts to cover oxidation process [sic] that occurs before the oxygen is turned into a plasma (i.e., before plasma ashing has even begun).” (See Defendants Op. Br. at 53.) This is incorrect as demonstrated by Samsung’s construction. (See Samsung Op. Br. at 57 (“*During the process of removing photoresist through plasma ashing / etching*, creating an oxide layer sufficient to protect the underlying first conductive layer.”).) The “problem” is Defendants’ mischaracterization of plasma ashing, as noted above. Samsung’s construction is consistent with the claim language that requires that the protective oxide layer be formed during the step that is used to remove the photoresist. (See Ex. I at 3:59-4:2, 4:34-37.) The process parameters cited by Defendants from the specification are those for one specific embodiment used to create the protective oxide during the step that is used to remove the photoresist. (See Defendants Op. Br. at 53; *see also* Ex. I at 2:61-3:2.) To the extent Defendants’ construction implies a different view, it is wrong. In any case, it does not clarify the claimed context of the term “simultaneously formed” and should be rejected for at least that reason.

6. “protective oxide layer”

Samsung’s Construction	Defendants’ Construction
“An oxide layer sufficient to prevent damage to an underlying layer.”	“An oxide layer of a predetermined thickness (e.g., a thickness of 30 to 80 Å for an aluminum conductor) that is used to prevent damage to an underlying layer by preventing reaction between the wiring, an organic solvent and water in subsequent processing steps.” ¹⁸

¹⁸ Defendants changed their construction for this term to “an oxide layer of at least 30Å thickness that functions to prevent damage to an underlying layer during subsequent processing,” (Ex. FF), and thus apparently agree that their attempt to add a 30-80 Å limitation to the independent claims is improper. Defendants’ new construction is simply another attempt to add a numerical limitation to a non-numerically limited claim term, and should likewise be rejected for lack of support in the intrinsic record. *See Ecolab*, 264 F.3d at 1366.

The proper construction of this term is set forth in Samsung's brief at 58. Defendants concede that "the claimed oxide layer is used to prevent damage to an underlying layer," but propose to read additional limitations into the claim to "capture[] the true scope" of the invention. (Defendants Op. Br. at 53.) Defendants' attempts to read additional limitations and a specific embodiment into this claim term lacks basis in the facts and law.

Defendants argue that the "protective oxide layer" must have "a predetermined thickness" between "30 Å and 80 Å for aluminum." (Defendants Op. Br. at 54.) Notably, this claimed range does not appear in the independent claims. (See Ex. I at 3:47-4:5, 4:24-40.) Rather, this range is pulled from the specification related to one specific embodiment under one specific set of process parameters and materials. (See Ex. I at 2:61-3:2.) There is no basis to read this example into the claims. The actual size of the "protective oxide layer" will necessarily be the result of the specific materials and parameters used for the other aspects of the method. This form of limitation without a specific numerical range is common practice. See, e.g., *Ecolab, Inc. v. Envirochem, Inc.*, 264 F.3d 1358, 1366 (Fed. Cir. 2001) ("[W]e agree with the district court and Ecolab that there is no basis in the intrinsic record on which to infer adding a numerical limitation to the phrase 'substantially uniform'....").¹⁹

Defendants argue that "this claim term should only encompass the range of thickness that improves upon the conventional oxide layer and the conditions under which it is formed." (Defendants Op. Br. at 56.) Significantly, neither the claims nor the specification make any reference to the "conventional oxide layer" on which Defendants' entire argument is based. The

¹⁹ Moreover, Defendants' attempt to read in a 30-80 Å limitation should be rejected because that limitation is already part of dependent claims 4 and 14. (Ex. I at 4:13-15, 4:55-56.) See *Phillips*, 415 F.3d at 1314-15 ("[T]he presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim.").

prior art does disclose that oxide layers were known to exist, but—as recognized by the Patent Office—the ’177 patent inventors were the first to use an oxide layer to protect the underlying surface in the methods recited in the claims. (See Ex. J. at J-54-55 (“The following is an Examiner’s Statement of Reasons for Allowance: *The combination of method steps, in the manner claimed ... wherein ... a protective oxide layer is formed upon the exposed conductive layer* simultaneously with removing a resist by plasma ashing, *is not taught by the prior art.*”).) Thus, Defendants’ attempt to create a non-infringement argument through claim construction by characterizing its own “protective oxide layer” as a “natural” one should be rejected.

Defendants argue that absent acceptance of their construction, the claims would be invalid. (See Defendants Op. Br. at 53-54.) As an initial matter, Samsung disagrees. The Patent Office was fully aware of the possibility of “natural oxide layers” being formed—indeed it cited to such a reference during prosecution—but ultimately allowed the claims understanding that the ’177 applicants were the first to use an oxide layer as a protective layer in the context of the claimed methods. (See Ex. J. at J-54-55 (citing U.S. Patent No. 4,857,141 (“Abe et al.”) “to further show the state of the art” and recognizing that the method claims in the patent application was not taught by the prior art).) The prior art cited by Defendants in support of their argument appears no more relevant than that already before the Patent Office, and, in any case, was not before the Patent Office. As a result, it is incorrect to construe the claims based on the litigation positions that Defendants have partially disclosed in their claim construction brief. At bottom, Defendants’ attempt to improperly read limitations and embodiments into the claims cannot be predicated on the invalidity arguments it hopes to make at trial.

7. **“removing said oxide layer before forming a second conductive layer on said exposed top surface of said first conductive layer”** (claim 1) and **“removing said oxide layer before forming said second conductive layer on said exposed top surface of said first conductive layer”** (claim 8)

Claim Term	Samsung's Construction	Defendants' Construction
“removing said oxide layer before forming a second conductive layer on said exposed top surface of said first conductive layer”	The meaning of this phrase requires no construction. To the extent a construction is necessary, the phrase should be construed as “removing the protective oxide from the top surface of the first conductive layer before forming a second conductive layer.”	“Getting rid of the entire protective oxide layer before forming a second conductive layer such that the top surface of the first conductive layer is completely exposed”
“removing said oxide layer before forming said second conductive layer on said exposed top surface of said first conductive layer”	The meaning of this phrase requires no construction. To the extent a construction is necessary, the phrase should be construed as “removing the protective oxide from the top surface of the first conductive layer before forming a second conductive layer.”	“Getting rid of the entire protective oxide layer before forming a second conductive layer such that the top surface of the first conductive layer is completely exposed.”

The proper construction of these phrases, should any be necessary, is set forth in Samsung's brief at 59. There is no genuine need to clarify any aspect of the phrase—Defendants seek to read two more unwarranted limitations into the phrase so they can apparently make additional non-infringement arguments.

There are no longer any terms in this phrase that Defendants seek to have construed. Rather, Defendants' proposed construction instead asks the Court to require that “the entire oxide layer” be removed and that the top surface be “completely exposed.” (See Defendants Op. Br. at 56-58.) Neither limitation is warranted. With respect to “removing” the protective oxide layer, scientific perfection is not warranted by either the '177 patent nor the patent laws. See *Conoco, Inc. v. Energy & Envtl. Int'l, L.C.*, 460 F.3d 1349, 1360-61 (Fed. Cir. 2006) (holding that an accused mixture infringes, even though it contains minor impurities not expressly allowed by the claim, because one of skill in the art would understand the claimed mixture to include those

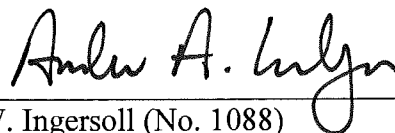
minor impurities) (*see also* Samsung Op. Br. at 59-60). Indeed, none of the passages Defendants cite from the patent support its construction. (*See* Defendants Op. Br. at 56-58.) Defendants' reliance on extrinsic prior art references that were not before the Patent Office likewise provides no basis for its attempt to read limitations into the claims.

With respect to Defendants' attempt to require that the top surface of the first conductive layer be "completely exposed," that is not what the claims says and not with the specification discloses. (*See* Ex. I at 3:8-13, 4:3-5, 4:38-40.) Defendants' proposed construction suggests that removing the protective oxide layer is necessary to "expose" the top surface of the first conductive layer. (*See* Defendants Op. Br. at 57 ("Until the entire oxide layer is completely removed, the top surface of the first conductive layer *cannot* be exposed....").) But the claim itself requires that the "top surface of the first conductive layer" be exposed during the formation of the contact hole—well before the removal of the protective oxide layer. (*See* Ex. I at 3:54-58 ("[F]orming a contact hole ... *to thereby expose a top surface of said first conductive layer*....").) All that is required by the phrase at issue is that the oxide layer be removed from the *previously* exposed top surface (*i.e.*, "said exposed top surface") of the first conductive layer before forming the second conductive layer, not that the surface of the first conductive layer be "completely exposed." In sum, the fact that Defendants' accused processes may not "get rid of the entire protective layer" or "completely expose" the top surface of the underlying conductive layer does not escape the claims. Defendants' attempts to rewrite unambiguous claim language to create non-infringement positions should be rejected.

CONCLUSION

For the reasons set forth above and in Plaintiff Samsung's opening brief, Samsung respectfully requests that this Court construe, as a matter of law, the disputed terms of the patent-in-suit as set forth above.

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Dated: April 28, 2008

CERTIFICATE OF SERVICE

I, Andrew A. Lundgren, Esquire, hereby certify that on April 28, 2008, I caused to be electronically filed a true and correct copy of the foregoing document with the Clerk of the Court using CM/ECF, which will send notification that such filing is available for viewing and downloading to the following counsel of record:

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